A STUDY OF
IMPACT OF BRAHMI- AN AYURVEDIC MEDICINE
AND
HYPNOSIS ON ANXIETY

A

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BY

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DECLARATION

I hereby declare that the work presented in this thesis is original and independent. I further declare that it has not formed, as a whole or in part, the basis for the award of my degree in any other institution or university.

Certified by

DR. GANDHARVA R. JOSHI **MR. PRASHANT BHIMANI**

CERTIFICATE

This is to certify that the thesis **'A STUDY OF IMPACT OF BRAHMI- AN AYURVEDIC MEDICINE AND HYPNOSIS ON ANXIETY'** submitted by **Mr. Prashant Bhimani** to Saurashtra University, Rajkot for the degree of Doctor of Philosophy in Psychology is a record of bonafied research work carried out by him under my supervision and guidance for the last 6 years and 10 months. The results embodied in the thesis have not been submitted to any other university or institute for the award of any degree or diploma.

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1.1 INTRODUCTION TO STRESS

The World Health Organization (WHO) defines health as the state of complete physical, mental and social well-being and not merely the absence of disease. The current emphasis in health care is on prevention and health promotion as well as the treatment and diagnosis of medical disorders. Hence psychological well-being is given equal importance compared to physical and social well being. Mental or psychological health care has been getting more importance today, as we can see more and more psychologists are working in clinical area.

The role of psychology in every human walk can't be ignored. The speed and complexity of modern life with its constant change and its demands for new knowledge, skills and competencies leave little room for either contemplation or complacency, says Carson et al (1988).

Each day emerges with different and new challenges for modern man. Coping with these challenges has become inevitable to sustain and survive in this era. In order to that people incorporate different coping patterns to avoid stress of recent times.

In 1936, Hans Selye, first introduced the concept of stress in recent life sciences in psychologically stress refers to a state of organism resulting from interaction with the environment says, Pestonjee (1992). Further he adds, during the eighteenth and nineteenth centuries, stress was equated with 'force, pressure or strain' exerted upon a material object or person which resists these forces and attempts to maintain its original state.

Further more he adds that in psychology stress refers to a state of the organism resulting from some interaction with the environment.

In psycho-physiology, stress is ‘that’s stimulus which imposes detectable strain that cannot be easily accommodated by the body and so presents itself as impaired health or behavior.

As per Webster’s dictionary (1997), any force or influence that tends to distort the normal physical or mental state is called ‘stress’. Physically, stress is produced by abnormal stimulation, such as disease, injury, extreme ambient temperatures, etc. mentally or emotionally, a certain amount of stress is inherent in every conscious thought or decision. Stress is recognized as a condition, however, only when it is sufficiently intense as to be beyond the ability of the body’s regulating mechanisms to cope with it.

Stress and anxiety are part and parcel of human existence. Anxiety is a kind of fear or apprehension about some future possible threat. Anxiety is a normal response to anything that is of concern, the outcome of which is uncertain. It may, however become excessive and irrational and may be manifested in unhealthy behavior.

It is anxiety that impels us to go for medical check-ups, or slow down and thus to lead longer and more productive lives. But while most people feel anxiety some of the time, some people feel anxiety most of the time. For these people it is not an adaptive response. It is a source of extreme distress, relievable only by strategies that limit freedom and flexibility, says Bootzin et al (1993). Most of the people feel anxious in various stressful situations, so it is becoming of great concern for behavioral scientists.

Stress and anxiety are Physical states, which derive from the person’s appraisal of the success with which he or she can adjust to the demands of environment. According to Coleman (1981), stress is the reaction of the body and mind to meet the needs.

The process of cognitive appraisal involves continual monitoring of at least four aspects of person's interactions with environment and a continual balance between them.

These four aspects are…

1. Demands made on the person.
2. Their personal characteristics and coping resources, their knowledge, attitudes and behavioral style.
3. Constrains under which they have to cope.
4. Other support they receive from others in coping.

The list of potential stressors is virtually limitless and they represent changes that can occur in a person's life, Mehta (1997).

Health care professionals are focusing more on psychological and behavioral aspects of anxiety along with physiological aspects. Present researcher believes that our thinking should be more on solution oriented than problem oriented. That advocates positive attitude towards solution for better life.

In today's world behavioral aspects of human beings are becoming very crucial as well as important too. One needs to understand and define lines between normal and abnormal behavior. It is rather difficult to do so. However, abnormal behavior is surely seen and understood by behavioral scientist in their scientific perspectives. More or less abnormal behavior can be accepted as undesirable many frustrations in society at large.

1.2 AN INTERDISCIPLINARY APPROACH

Health care professionals welcome an interdisciplinary approach for the management of ailments today. Current research is also influences by this approach and tries to find impacts of ancient treatment method especially regard to psychological disorders and recent psychological intervention method or psychological treatment.

In present study, the researcher has tried to deal with this issue. Among all psychological disorders 'anxiety' is taken as a core problem to be solved by two different treatment methods. One method belongs to psychotherapeutic technique and the other one is an Ayurvedic medicine. As psychotherapeutic intervention method, 'hypnosis' was used as a therapy. As an Ayurvedic treatment, 'Brahmi' (an ayurvedic medicine) was used as other treatment method for the same.

Now let us have a brief look on history of Classification of Mental Disorders, then after more focus will be on particular problem of research, e.g., anxiety and it's management by two different aforesaid treatments.

1.3 HISTORY OF CLASSIFICATION OF MENTAL DISORDERS

The classification of illnesses, which is known as '*nosology'*, has always been integral, dynamic and changing aspect of any medical or health care system from time to time. 'Although the first attempt to classify madness or mental illness can be stressed back to Ayurveda, Plato (4^{th} century BC)' and Asclepiads (1^{st} century BC), in psychiatry has come far ever since. Ahuja (2002).

At present, there are two major classifications in psychiatry, namely *International Classification of Diseases* (ICD-10,1992) and *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR, 2000), which is a minor revision of the DSM-IV (1994).

According to Sadock et al (2003), the various classification systems used in psychiatry date back to hippocrates, who introduce the terms '*mania'* and

'*hysteria'* as forms of mental illness in 5th century BC. Since then, each era has introduced its own psychiatric classification. The first U.S. classification was introduced in 1869. In 1952, the APA's committee on Nomenclature and Statistics published the 1st edition of DSM (DSM-I). Five edition have been published since then: DSM-II (1968); DSM-III (1980); are revised DSM-III, DSM-III-R (1987), DSM-IV (1994), and DSM-IV-TR (2000).

It is known that the two most important classifications are, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) developed by APA in collaboration with other groups of mental health professionals, and the *International Classification of Diseases* (ICD), developed by the World Health Organization.

As per Ahuja (2002), ICD-10 classification has been tested extensively all over the world (51 countries; 195 clinical centers), and has been found to be generally applicable across the globe. Now lets have a gross look on classification.

1.3.1 Mental and Behavioral Disorders According to ICD-10

Let us have a brief look on ICD-10 classification description.

F00-F09 Organic, Including Symptomatic, Mental Disorders

This group includes mental and behavioral disorders due to demonstrable cerebral disease or disorder, either primary (primary brain pathology) or secondary (brain dysfunction due to systemic diseases).

The disorders in this section include delirium, dementia, organic amnestic syndrome and other organic mental disorders.

F10-F19 Mental and Behavioral Disorders due to Psychoactive Substance Use

This group includes mental and behavioral disorders due to the use of one or more psychoactive substances.

The disorders in this section include acute intoxication, harmful use, dependence syndrome, withdrawal state, amnestic syndrome, and psychotic disorders due to psychoactive substance use.

F20-F-29 Schizophrenia, Schizotypal and Delusional Disorders

This group includes mental and behavioral disorders characterized by prominent disturbances of thought, perception, affect and/or behavior. This disorder in this section includes schizophrenia, schizotypal disorder, persistent delusional disorders, acute and transient psychotic disorders, induced delusional disorder, and schizoaffective disorders.

F31-F39 Mood (Affective) Disorders

This group includes mental and behavioral disorders characterized by a prominent disturbance of mood.

The disorders in this section include manic episode, depressive episode, bipolar affective disorder, recurrent depressive disorder, and persistent mood disorder.

F40-F48 Neurotic, Stress-related and Somatoform Disorders

There is no category with code number (F49). This group includes mental and behavioral disorders that were earlier labeled as neurotic disorders, with an emphasis and psychological causation.

This disorder in this section includes anxiety disorders, phobic anxiety disorders, obsessive-compulsive disorders, dissociative (conversion) disorders,

somatoform disorders, reaction to stress, and adjustment disorders, and other neurotic disorders.

F50-F59 Behavioral Syndromes Associated with Physiological Disturbances and Physical Factors

This group includes mental and behavioral disorders that were earlier called psychosomatic disorders. The term psychosomatic is no longer used because its use implied that the association between the psychological factors and physical disorder is etiological. Also it presumed that the psychological factors are not important in other medical illnesses and physical disorders.

The disorders in this section include eating disorders, non-organic sleep disorders, sexual dysfunctions (not caused by organic disorder or disease), mental and behavioral disorders associated with puerperium, and abuse of non-dependence-producing substances.

F60-F69 Disorders of Adult Personality and Behavior

This group includes mental and behavioral disorders that are the persistent expression of an individual's characteristic lifestyle and mod of relating to self and others.

The disorders in this section include specific personality disorders, enduring personality changes, habit and impulse disorders, gender identity disorders, disorders of sexual preference, and psychological and behavioral disorders associated with sexual development and orientation.

F70-F79 Mental Retardation

This group includes disorders with arrested or incomplete development of the intellectual abilities and adaptive behavior, which may or may not be associated with other physical or mental disorder.

The disorders in this section include mild, moderate, severe, and profound mental retardation.

F80-F89 Disorders of Psychological Development

This group includes mental and behavioral disorders with an onset during infancy or childhood and characterized by an impairment or delay in the development of functions that are strongly related to biological maturation of the central nervous system.

The disorders in this section include specific developmental disorders of speech and language, specific developmental disorders of scholastic skills, specific developmental disorders of motor function, mixed specific developmental disorders, and pervasive developmental disorders.

F90-F98 Behavioral and Emotional Disorders with Onset Usually Occurring In Childhood and Adolescence

This group includes miscellaneous mental and behavioral disorders that have an onset in childhood and adolescence. The disorders in this section include hyper kinetic disorders; conduct disorders, mixed disorders of conduct and emotions, tic disorders, and other disorders.

F99 Unspecified Mental Disorders

Multi-Axial Classification

Labeling the patient with a diagnosis is not enough. This degrades the individual to just another case and does not direct attention to the whole individual.

Recently, there has been an upsurge of interest in multi-axial systems for achieving a more complete diagnosis. The pattern adopted by DSM-IV is a good example. In this system, an individual patient is diagnosed on five separate axes.

This method helps in a more holistic assessment of an individual patient. Recently, ICD-10 has also brought out its own multi-axial classification version (Table 1.1).

Table-1.1

SOME VERSIONS OF ICD-10

▪ Clinical Descriptions and Diagnostic
▪ Guidelines (CDDG)
▪ Diagnostic Criteria for Research (DCR)
▪ Multi-axial Classification Version
▪ Primary Care Version

As per ICD-10, the present core problem of research i.e. anxiety can be considered from F40 - F 48 section of the classification.

1.3.2 DSM-IV-TR's Relation to ICD-10

The ICD-10 has been used by World Health Organization (WHO) Member States since 1994. Chapter five of it covers some 300 'Mental and behavioral disorders.' The ICD-10's chapter five has been influenced by APA's DSM-IV and there is a great deal of concordance between the two.

Further more, Sadock and Sadock (2003), adds, the texts revision of the 4th edition of DSM (DSM-IV-TR) was designed to correspond to the tenth revision of the International, Statistical, Classification and Diseases and Related Health Problems (ICD-10), developed in 1992.

ICD-10 is the official classification system used in Europe and many other parts of the world. All categories used in DSM-IV-TR are found in ICD-10, but note all ICD-10 categories are in DSM-IV-TR. The code numbers for disorders in DSM are fully compatible with ICD.

'The gold standard for defining mental disorder and its sub class has become the American Psychiatric Associations Diagnostic and Statistical Manual of Mental Disorders (DSM), whose 4th edition (DSM IV) was published in 1994. Carson et al (2003).

Here is how the DSM IV defines mental disorders.

1.3.3 Definition of Mental Disorder According to DSM-IV-TR

A mental disorder is conceptualized as a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and that is associated with present distress (a painful symptom) or disability (impairment in one or more areas of functioning) or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom.

In edition, this syndrome or pattern must not be merely an expectable and culturally sanctioned response to a particular event, for example, the death of a loved one. Whatever its original cause, it must currently be considered a manifestation of a behavioral, psychological, or biological dysfunction in the individual.

Neither deviant behavior (e.g. political, religious, or sexual) nor conflicts that are preliminary between the individual and society are mental disorder unless the deviance or conflict is a symptom of a dysfunction in the individual as described above. American Psychiatric Association, (2000).

1.3.4 Dsm-Iv-Tr A Multi Axial Evolution

In North America, the 'bible' of abnormal psychology and psychiatry is the Diagnostic and Statistical Manual of the American Psychiatric Association.The current version of the book is known as DSM IV-TR. It lists a set of disorders and provides detailed descriptions on what constitutes a disorder such as major depression or anxiety disorder.

It also gives general descriptions of how frequent the disorder occurs in the general population, whether it is more common in males or females and other such facts. The diagnostic process uses five dimensions called 'axes' to ascertain symptoms and overall functioning of the individual.

According to Sadock and Sadock (2003), DSM-IV-TR is the official coding system used in the United States. DSM-IV-TR is the multi axial system at the evaluates patient along several variables and contains five axes.

Axis I and Axis II make up the entire classification and mental disorders: 17 major classifications and more than 3000 specific disorders. In many instances, patients have disorders on both Axes. These axes are as follows…

Table 1.2

The Five Axis of DSM-IV

Axis I	Clinical Psychiatric Diagnosis
Axis II	Personality Disorders and Mental Retardation
Axis III	General Medical Conditions
Axis IV	Psychosocial and Environmental Problems
Axis V	Global Assessment of Functioning: Current and in past one year (rated on a scale)

In present study, anxiety disorder is the core issue to be treated by two different interventional methods. The diagnostic criteria are followed as per DSM-IV-TR.

Clinical diagnosis was based on this multi-axial evaluation system. The details of Axis-I is mentioned below.

Axis I

Axis-I consists of clinical disorders and other condition that may be a focus of clinical attention.

Table-1.3

Clinical Disorders and Other Disorders

That May Be a Focus of Clinical Attention

▪ Disorders usually first diagnosed in infancy, childhood, or adolescence (excluding mental retardation)
▪ Delirium, dementia, and amnestic and other cognitive disorders.
▪ Mental disorders due to a general medical condition not elsewhere classified.
▪ Substance-related disorders.
▪ Schizophrenia and other psychotic disorders.
▪ Mood disorders.
▪ Anxiety disorders.
▪ Somatoform disorders.
▪ Factitious disorders
▪ Dissociative disorders.
▪ Sexual and gender identity disorders.
▪ Eating disorders.
▪ Sleep disorders.
▪ Impulse-control disorders not elsewhere classified.
▪ Adjustment disorders.
▪ Other conditions that may be a focus of clinical attention.

From American Psychiatric Association. Diagnostic and Statistical, Manual of Mental Disorders. Fourth ed. Text. Rev. Washington, DC: (2000)

So, in present study the diagnostic criteria of anxiety have been based on previous classifications.

1.4 ANXIETY- THE CORE ISSUE OF PRESENT RESEARCH

In modern era, everyone seems in some kind of stress in more or less amount. One has to face the realities and challenges of life. It would be appropriate to say that minor too severe anxiety has been felt by all in any point of life which in variably deciduous behind it's positive or negative repercussion. Anxiety can be understood as a general feelings apprehension about possible danger. Some times it creates fearfulness and nervousness in the individuals.

The word 'anxiety' has been derived from Greek meaning 'to constrict' and also from the German 'angst' (sense of 'dread' and 'loss'). The term connotes the unpleasant sense of apprehension. The other words are 'angor' and 'anxietas' (Latin), 'angoises' and 'anxiete' (French) and 'angest' and 'angslan' (Swedish). Rao and Kuruvilla (1997).

1.4.1 History

Almost a century ago, Sigmund Freud coined the term *anxiety neurosis,* which he believed resulted from dammed – up libido: A physiologically increase in sexual tension leads to a correspondence increase in libido, the mental representation of the physiological event, says Sadock and Sadock (2003).

When Freud early translator mistranslated *angst,* The German word for 'fear', as anxiety, Freud himself generally ignored the distinction that associates anxiety with a repressed, unconscious object and fear with a known, external object.

In recent years, Freud's view on the nature of neurosis have been criticized as too theoretical and not sufficiently tied to the real world. This is because, Freud believed anxiety to be key not only to disorders where anxiety symptoms are

obvious but also to many disorders in which there are few, if any, actual symptoms of anxiety, Carson et al (2003).

1.4.2 Defining Anxiety

Various references are available on the definition of 'anxiety'. In present research following are some of them:

According to Carson et al (2003), the DSM has identified such cases within group of disorders that share obvious symptoms and features of anxiety known as the *anxiety disorders*. Historical anxiety disorders word considers being example of neurotic behavior, which involved the exaggerated use of avoidance behaviors or defense mechanism. To Freud, neurosis was psychological disorder that resulted when there was anxiety that was a sign of intra psychic conflict. Freud believed that many of his patient's physical complains (such as temporary blindness or paralysis) were caused by anxiety. – Chiefly about sexual or aggressive feelings they were uncomfortable with. Freud's idea required inferring that anxiety some how existed in the mind and caused neurotic behavior even though it could not be observed or measured.

Anxiety is a fundamental mode of response to any stimuli that evokes expectations of danger or threat to the person. The threat can be external, like that of the distress of facing an interview, or the fear of appearing for an examination, or the dread of losing a job or the threat of getting a divorce notice, or the agony of being transferred to a remote place etc. It can be internal, like a conflicting decision making situation, that makes the person in between the devil and the deepest blue sea or an inability of the person to reach on a compromise between the instinctual impulses and super-ego values, or the defect or distortion in the self concept of the person which jeopardizes the integrity and stability, or the concern of the individual about the meaninglessness of life and the inevitable death, etc. Augustine (2002).

According to Webster's Pocket Medical And First Aid Dictionary (1997), fear or apprehension about some future possibility. Anxiety is a normal response to anything that is of concern, the outcome of which is uncertain, as a first day of school or a trip to the dentist. It may, however, become excessive and irrational. Concern about making a good impression when meeting people, for example, is a form of anxiety; such anxiety is unhealthy, however, when apprehension is so great that one refuses to meet new people. Excessive anxiety about pollution, auto accidents, etc. can trap one in the home without hope of reprieve.

Various references are available on the meaning of 'anxiety'. In present research following are some operational definitions:

(1) 'A general feeling of apprehension about possible danger'.

- Carson, Butcher and Mineka (2003).

(2) Feeling of apprehension caused by anticipation of danger, which may be internal or external.

- Sadock and Sadock (2003).

(3) Anxiety is a normal phenomenon, which is characterized by a state of apprehension or unease arising out of anticipation of danger.

- Ahuja (2002).

(4) A state of increased physiological arousal and generalized feeling of fear and apprehension.

- Bootzin et al (1993)

(5) A vague, objectless fear; an uneasy fearful feeling.

- Morgan et al (1993).

(6) Strong fear response; usually unrealistic or irrational.

- Barclay Martin (1977).

(7) Increased arousal accompanied by generalized feelings of fear or apprehension.

- Baron (2002).

(8) Sometimes individuals suffer from an emotional disorder, which is psychologically just as disabling as the more extreme forms of fear but in which the individual really does not know, of what he is afraid; this is known as cintā (anxiety).

- Gupta (2000)

(9) Extreme forms of such anxiety occur and are known as panic, in which the whole social and physical reality is vested with fear and considered a possible source of danger.

- Brown (1940)

(10) An unpleasant emotion that is caused by the presentation of punishers or aversive stimuli.

- Martin and Osborne (1989)

Broadly, above said definitions converge according to DSM-IV.

As Augustine (2002), mentions, all anxiety manifestations need not be same in their quality and intensity under all situations or contexts. Different individual may react differently under a given situation or of contexts that are prone to generate anxiety in a person.

In some persons anxiety responses need not be even perceptible even though the situation is sufficient enough to induce anxiety considering the complexity or threat of the situation in general. Some persons are competent to approach or surmount such situations ignoring the inherent threat, apprehension or complexity of the situation similarly a particular individual need not respond with the same intensity under a given anxiety prone context. Some situations may be extensively relaxing for a particular person irrespective of the objectivity of the threat or complexity of that particular context and others may be

insignificant to the same person even though it is extremely confusing or threatening to some other persons.

When anxiety causes a series of bodily reactions, two kinds of coping processes to deal with it, have been reported. Mechanic (1962) ; Lazarus (1975). The first is a ‘direct action’ concerned with efforts to deal with the problems causing the ‘stress emotion’, and the second is on ‘palliation of emotion’ focused on reducing the visceral or motor disturbances that are the features of the ‘stress emotion’. The drugs by quieting the autonomic arousal basically employ palliative modes, i.e. drugs deal with the somatic reactions rather than the causes Lazarus, et al (1970) of such reactions.

As Rao and Kuruvilla (1997), suggests, for managing anxiety, relaxation may operate from periphery or center and include: transcendental meditation, progressive relaxation training, hypnosis, guided imagery and autogenic training.

Effective control and management of anxiety is quite and important issue as well as management of physical problems. The present research has tried to understand how this ailment can be controlled or managed through different therapeutic interventions.

Present researcher believes that Anxiety is a cognitive, behavioral, and biological response that prepares the individual to handle the stresses and conflicts of everyday life.

It serves to enhance the detection of threat in situations or environments that are potentially dangerous. The detection of potential or real threat or danger can lead to a response known as the alarm reaction or the ‘fight or flight’ response.

Typically, this response includes feelings of fear or apprehension, and physical symptoms such as increased heart rate, sweating, dizziness, and shortness of breath.

Anxiety can be either a normal reaction to threat of harm or, if the reaction is excessive and frequent, a pathological reaction. A pathological reaction would typically result in disruptions in a person's ability to work, manage household tasks, and/or maintain interpersonal relationships. [(a)]

In long run these kinds of symptoms become a part of individual routine. Usually, it is observed widely that anxiety symptoms are ignored in primary stage by majority of population. When it appears as a prominent psychological complain, people would like to visit physician or psychologist.

Being an ayurvedic physician, during practice present investigator came across number of patients having multiple complains of anxiety and associated problems. Investigator got interest on elimination of anxiety through conventional ayurvedic treatment alongwith psychological interventional method.

Present study is concerned with anxiety in relation to two types of treatments.

1. Brahmi- an ayurvedic medicine
2. Hypnosis- a psychotherapy

So as, the title of the problem is 'A Study of Impact of Brahmi- an Ayurvedic Medicine and Hypnosis on Anxiety'.

Present project is to find out the impact of these treatment methods and also to find out weather age, gender and marital status play any role interactively.

[(a)] **www.ohiolink.edu**

Let’s have a look at the other modality of treating anxiety. In present research the other method was used from ancient Indian treatment wisdom, which is well known as ‘Ayurveda’.

1.5 AYURVEDA

India is well known for its ancient wisdom and culture world over since ages. Ayurveda is India’s ancient system of holistic living and herbal medicine. It was developed long ago to help people understand who they are, what they should be doing in life, and how they should be doing it. Ayurveda focuses on self-discovery, self-knowledge and self-definition. Green (2000). It organizes its knowledge into theories of health and disease that speak eloquently to all listeners of life’s basic rules, how those rules can be used to maintain and enhance health, and how to use them to retrieve health that has been compromised by disease.

According to Pestonjee (1992), it is interesting to note that the body-mind relationship, characteristic of modern stress studies, is emphasized in the ayurvedic (Indian) system of medicine.

Ayurveda focuses equally on preventive, curative and promotive aspects of mental health. It is a holistic approach, which aims at harmony between the body, the mind and the soul. In most of the Indian medicine system such as Ayurveda, Unani or Siddha a combination of rituals, exercises, diet and medicines is prescribed based on certain principles.

According to Kapur (2001), the *Atharvaveda* lists 20 types of mental illnesses along with appropriate therapeutic approaches. These therapeutic approaches are: *Atharvani* (psychotherapy), *Daivya* (naturopathy), and *Anushyaja* (herbal medicines and amulets).

Atharvani focuses on the chanting or recitation of words related to the Supreme power and *sankalpa* (will). A systematic compilation of all medical speculations was carried out by Ad 200. As an independent branch of medicine, technically termed as the science of life (Ayurveda), Caraka Samhita represents the main text of this system.

1.5.1 Definition of Ayurveda

The term Ayurveda is self-defined.

'Āyu' refers to life and 'Veda' refers to knowledge. It is 'Knowledge of life' as a whole that Ayurveda elaborates and it is not limited merely tackling the 'health' and 'disease' aspect of life. It encompasses the total sweep of life sciences and peruses the quest for understanding life in all its ramifications.

Āyu stands for English expression of 'Span of life.' The totality of time that passes around activities/rest, from birth to death is Āyu. Āyu is a process, a dynamic state of existence, of intelligence, of creativity, of purity and of bliss.

Caraka Samhita defines Āyu (life) as a continuum of the infinite consciousness manifesting as a composite, comprehensive and balanced combination of four ramifications. Viz. Body (Sarira), Sensory organs (Indriyas), Mind (Sattva) and Soul (Ātmā). The life has following synonyms, which suggest its characteristics:

S'arīrendriyasatvātmasamyogo dhārī jivitama।
Nityagas'cānubandhas'ca paryayairayurucayate॥ (1)
(Ca. Sū. 1/42)

'Āyu' and 'Veda' combined together divulge the comprehensiveness of the agenda hidden in the term 'Āyurveda' depicting the true and practicable sense of the philosophy and science of life.

Here in Ayurveda, beneficial and harmful as well as pleasant and unpleasant states of life alongwith what is good and what is bad for life, its measurements and life itself described.

Hitāhitam sukham dukhaṃ āyustasya hitāhitam ।
Manam ca tacca yatroktam āyurveda ḥ sa ucyate ॥ (2)
(Ca. Sū. 1/41)

Ayurveda is known as mind-body medicine of India. It is one of the world's oldest systems of medicines, way back to some five thousand years. Recently Ayurveda has spread far beyond its traditional base and is gaining worldwide attention.

Ayurveda is the ancient Indian healing system and life science. The world Ayurveda is a 'Sanskrit' term meaning 'science of daily life' or 'longevity', from two roots: 'ayus' meaning 'life', 'daily living' or 'life cycle', and 'vid', meaning 'knowledge', 'path' or 'science'. Green (2000).

Ayurveda contains psychological, emotional, and spiritual as well as physiological care as a healing system. Ayurveda's knowledge was transcendented from ancient masters to next generations. This enabled masses of information to be absorbed and retained. The knowledge it imparts has evolved through historical, cultural and religious change.

Ayurveda the ancient, indigenous health science is prominent among the many branches of science evolved by ancient Indian seers. It deals with the laws of health and disease with an emphasis on a lifestyle.

1.5.2 Definition of Healthy Person According to Ayurveda

Ayurveda incorporates physical, social psychological, spiritual, philosophical facets of life in its ambit, evolving what can be termed somato-psycho-spiritual

approach, which is the most comprehensive and totalistic approach to the life and its two facets. i.e. health and disease:

Sushruta, the great Ayurveda surgeon, describes the total healthy human being as below:

Samdoṣaḥa samāgnis'ca samdhātu malkriyaḥ।
Prasannātmendriyamanaḥ svasthaityabhidhīyate ॥ (3)
(Su. Sū. 15/48)

Health is a state of well being at all the four planes of life, viz. soma, senses, psyche and the spirit. Balanced state of the constituents of body (Doṣa, Dhātu, Mala and Agni) and satisfaction/pleasure of senses, mind and the soul constitutes health.

In addition to the three Doṣas which represent bodily constituents, Ayurveda also describes two Doṣas in relation to the mind which are 'Rajas' and 'Tamas'. These two alongwith 'Sattava' are considered 'Gunas', but when they are vitiated is called 'Doṣas'.

1.5.3 Psycho-Philosophical Aspects of Ayurveda

Ayurveda conceives living being as a composite entity consisting of physical body, five sense organs, mind and the spirit. Mind, spirit and the body are considered three dimensions / spheres of life, thus, adding the much essential dimension of spirit to the western concept of psychosomatic medicine.

This three dimensional approach has been appreciated by the western scholars and the latest W.H.O. definition of health has largely adopted this Ayurveda concept of health. Health is defined as a state of perfect well being of the mind, spirit and the body (in all its dimensions.)

Psyche and the spirit are said to be interlinked and play complementary roles. Psyche is said to be unconscious (*Jada*) and active while the spirit is the conscious subject (*Karta*) and is inactive. Mind is active only in the presence of soul and the soul can perceive, only in association with the mind.

Mind is said to be one of two abodes of the diseases and various therapeutic approaches are mentioned for the management of psychological disorders. In fact, an element of psychic involvement is also postulated in the manifestation of most of the bodily disorders. Spiritual preaching's, chanting of mantras, offerings, etc. give a clue to the involvement of the spirit as well, in the manifestation of a disease.

Caraka, the great Ayurveda physician, also talks of three persuits in the form of desire to live (Pr$\bar{a}$nai$\dot{s}$an$\bar{a}$), desire to earn (Dhanai$\dot{s}$an$\bar{a}$) and desire to perform virtuous acts (Parlokai$\dot{s}$an$\bar{a}$)

(Ca.S$\bar{u}$. 11/3)

1.5.4 Mind According to Ayurveda

According to Murthy (2004), ayurveda considers-Mind- an organ of sense, a super sense to be more precise. It is atomic, unitary and the controller of all the sensory and motor organs. It considers mind among the three pillars (Tristh$\dot{u}$n$\bar{a}$) on which life rests and operates. With sensorial attachment being a great weakness of mind. It is the attachment or detachment that determines and distinguishes the enlightened sage and the common human. brahmabind$\bar{u}$pani$\dot{s}$ad rightly, admits the mind as being responsible for liberation or otherwise:

Man eva manuny ā n ā m kara n a m bandhmok s yo h o ।
Bandh ā ya vi s y ā sakta m muktayai nirvi s ya m sm r tam ॥ (4)
(**Brahmabind ū pani s ad 2)**

Mind receives orders and acts through the sensory and motor organs (Indriyas), which are located in the brain. The gateways of these indriyas (sensory organs) are situated on the surface of the physical body. Mind being atomic, can pervade the entire body, just as a dot of sandalwood oil can pervade the whole body by its fragrance. It can focus on different parts of the body and pervade our entire field of perception. Murthy (2004).

1.5.5 Definition of Mind in Ayurveda

The three terms 'Manas', 'Citta' and 'Sattva' have been employed in Ayurveda texts to denote mind. The word 'mind' likewise is derived to mean one, which perceives and comprehends:

Manyate J ñ ã yate anena iti manah । (5)
(S'abdakalpadruma)

Mind is known by its functions in Ayurveda. Manah (mind) is applied to mean; to think; to suppose, to imagine, to concentrate and to meditate. J ñ ã na is applied to mean; to know; to learn; to be aware; to be familiar or acquainted with, to ascertain, to investigate, to feel, to comprehend, to apprehend or to cognize.

1.5.6 Origin of Mind (Utpatti)

As said in (Sū.Sa.1/4), in the cosmological description of evolution, the nature (Prakr iti) is considered the matrix of the whole psychophysical universe. .

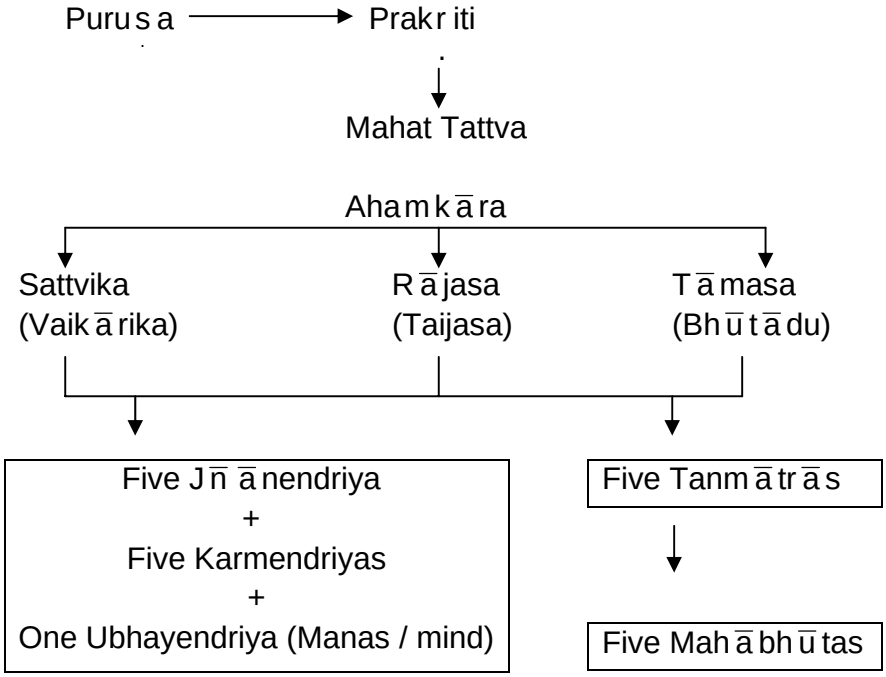
Sattva, Rajas and Tamas are three basic qualities, which are eternally present in nature and a natural state of equilibrium exists among these three. The process of evolution is initiated when a disturbance to this equilibrium is generated.

The evolution proceeds with the manifestation of Mahat from Prakr iti and .

Ahamkāra (ego factor or self-sense) from Mahat Tattva (Buddhi). In this description, Susruta admits- the origin of Mana from Vaikārika type of (Sattvika). Ahamkāra with the help of Taijsa (Rajāsa). Type of Ahamkāra.

(Sū.Sa.1/4)

1.5.7 Concept of Evolution of Mind in Ayurveda



Conscious Creation

11 Indriyas (Sensory organs)

Five Jnanendriya

1. Srotra (Ears)
2. Tvaca (Skin)
3. Netra (Eye)
4. Jihva (tongue)
5. Nasika (Nose)

Five Karmendriyas

1. Vani (Speech)
2. Hasta (Upper limbs)
3. Pada (Lower limbs)
4. Upastha (Genital organs)
5. Payu (Ractum)

Ubhyendriya

Manas

Unconscious Creation

Five Tanmatras

(Subtle proto-elements)

1. S'abda (Word)
2. Spars'a (Touch)
3.Rupa (Form or Vision)
4. Rasa (Taste)
5. Gandha (Smell)

Five Mahabhutas

(Proto – elements)

1. Prthvi (Earth)
2. Jala (Water)
3. Teja (Fire)
4. Vayu (Air)
5. Akash (Space or ether)

Figure: 1 Concept of Evolution of Mind in Ayurveda

Kuppuswamy (1985) says, according to *Samkhya Karika*, the development of *prakriti* arises on the basis of the three *gunas*, its constituent strands of powers (*Samkhya Karika,* 16). This is why *prakriti* is called the *pradhana*, because it is the first cause of all the evolutes. The original, un-manifested state is *samyavastha*, state of equilibrium, and state of rest. The tendencies to manifestation (*sattva*) and activity (*rajasa*) are held in check by the tendency to non-manifestation (*tamasa*). When there is a disturbance of the equilibrium, evolution, *parinama*, starts. *Prakriti* evolves under the influence of *purusha* (*Samkhya Karika*, 20, 21).

The apparatus of thought as well as the objects of thought evolve out of *prakriti*. The first evolute is *mahat*, the great. It is the basis of *buddhi*, the intelligence in the individual. As Radhakrishnan writes, while the term *mahat* brings out the cosmic aspect, *buddhi,* which is used as a synonym for it, refers to the psychological counterpart appertaining to each individual (Vol. II, p. 267).

Buddhi is the subtle substance of all mental processes. It is the first evolute or manifestation of *prakriti*. The *sattva guna* predominates in it. Like *sattva*, *buddhi* is illuminating. It is the 'discriminating' and 'determining' principle. The functions ascribed to *buddhi* clearly show that it can operate only when the latter evolutes like *ahamkara*, *manas* and the *indriyas* as well as the gross elements, which are the objects of knowledge, come into being.

Since it is the first evolute with definite functions, it has to be assumed that what is referred to be its cosmic rather than its individual aspect. Further, it should also be remembered that *buddhi* (or *mahat*) as the first product from *prakriti* is the precursor of both the subjective and the objectives evolutes.

Ahamkara, the self-sense the principles of individuation arises from *buddhi*. This well is clear from the above diagram.

1.5.8 Existence

According to Murthy (2004) direct perception involves the presence of soul (Ātmā), mind (Manas), cognitive sense (Indriyas) and the object of perception (Indriyārtha).

Caraka states-

'The one and the most important proof of existence of mind is materialization on otherwise of direct perception. The contact of mind with soul, sense, organs and their absence of contact leads to non-understanding of the objects.'

Satihyātmendriyārthānāmsannikarṣe na vartate।

Vaivṛtyānmanaso jñānasannidhyāttaccha vartate ॥ (6)

(Ca.Sā. 1/18-19)

1.5.9 Attributes (Gunas)

Mind is atomic (Anu) and unitary (Eka) declares Caraka:

Anutvamatha caikatvam dau guṇau manasaḥ smṛtau ॥ (7)

(Ca.Sā. 1/19)

As mind is too subtle to be perceived by the ordinary sense faculty, it is termed atomic.

Mind in the same individual appears multiple in characters due to variation pertaining to perception of its own objects (Svārtha), motivation and perception of objects of sense (Indriyārtha), and in its disposition. Similarly, it takes various forms due to its contact with qualities like intelligence (Sattva),

arrogance (Rajas), and ignorance (Tamas). But its only one because it can motivate only one sense organ at a time resulting in activation of only one organ at a time.

As mentioned in (Ca. Sā. 3/20-21), another important character of mind is fickleness (Cañcalatva). Mind moves and is located in the whole of sentient body.

Thus, unlike sense faculties, which are many, mind is one and unlike soul, which is ubiquitous of omnipresent, mind is atomic by nature. It is as potent and subtle as the soul and as mobile and fickle as Vāyu (Wind principle).

Mind is an evaluate of Ahāmkara (ego factor) and hence, it is Triguṇātmaka.

Cakrapāṇi, states in Ca. Sā. 3/13):

A man is Sāttvika at a time when he is tranquil, Rajāsika when he is thoughtful to passion and Tamāsika when he is caught by delusion, says Murthy A.R.V. (2004).

1.5.10 Functions (Karmāṇi)

Mind is active, and the soul is inactive. As the soul is sentient (Cetana), it is said to be the agent of action. The mind being insentient (Acetana) is said to be devoid of action even though it is possessed of action. But the mind cannot act until it is joined with the soul and inspired by the consciousness (of the soul). So the action of the mind cannot manifest independently.

Acetanaṃ kriyāvacca manaḥ cetayitā paraḥ।

Yuktasya manasā tasya nirdiś'yante vibhoḥo kriyā॥

Cetanavān yatas'cātmātataḥ kartā nirucyate ।

Acetantvācca manaḥ kriyāvadapi nocchyate ॥ (8)

(Ca.Sā. 1.75-76)

Caraka discusses four actions of mind viz. control or direction of sense faculties,

- Self-restraint
- Speculation &
- Consideration

Indriyābhigrahaḥ karma manasaḥ svasya nigrahaḥ ।

Ūho vicāras'ca, tataḥ paraṃ budhdhiḥi pravartate ॥ (9)

(ibid 1/21)

In addition, Caraka also describes five objects of mind viz.

- Cogitation,
- Consideration,
- Speculation,
- Concentration &
- Determination.

Cintyaṃ vicāryamūhyam ca dhyeyaṃ samkalpyaṃ eva ca ।

Yatkincit manaso jñeyam tat sarvaṃ hyarthasanjñakaṃ ॥

(ibid 1/20) (10)

Apart from these five, whatever (Yatkiñcit) that can be perceived by mind, independent of the five sense faculties should considered as its objects.

As in Cakrapāni, Ca. Sū. 8/4; Mind truly is the co-ordination, controller and motivator of sensory organs.

1.5.11 Location of Mind

Ayurveda scholars, regarding the location of mind- have dispute, division and confusion.

Bhela locates mind between Siras (Heal) and Tatu (soft palate).

Caraka, Susruta and Vāgbhata have indicated that Hṛdaya (Heart) is the seat of mind in association with Buddhi (intellect) and Atmā (soul).

Caraka in one particular context states that the entire sentient body (comprising of organ of tactile sensation) is the seat of Mana.

1.5.12 States of Mind

According to Murthy (2004), wakeful state (Jagrut), Dream State (Svapna) and deep sleep (Susupti) are the states generally accepted by all the schools of Indian philosophy.

(A) Wakeful State

Wakeful state can be described in ayurveda as under.

(1) Perception (2) Memory

(1) Perception (Anubhava)

Here Anubhava has been considered as perception in Caraka Samhita according to Murthy (2004) caraka emphases the role of soul and mind in perception- a mental faculty instantaneously manifested as a result of the proximity of the soul, sense faculties and the object of known as perception:

Ātmendriya manorthānam sannikarṣāt pravartate ।

Sukhadukhamanārambhādātmasthe manasi sthire ॥ (11)

(Ca.Sā. 1/138)

(2) Memory (Smrti)

Memory according to Caraka Samhita is nothing but the remembrance of thing directly perceived, heard (from scriptures) or experienced earlier.

Dṛṣtas'rutānubhutānam smaranāt smṛtirucyate ॥ (12)

(Ca.Sā. 1/149)

1.5.13 State of Dreams (Swapna)

Susruta holds that the corporeal self (Bhūtātmā), in association with the psyche dominated with activity (Rajas) experiences divergent dreams in accordance with the psychic impressions carried from the past life. (Su.Sā 4/36)

Caraka has identified seven types of dreams;

- Dṛṣta (seen)
- Sruta (head)
- Anubhūta (experienced)
- Prarthita (desired)
- Kalpita (imagined)
- Bhāvika (predictive)
- Doṣaja (humoral)

(Ca.In. 5/43)

1.5.14 State of Sleep (Nidrā)

Ayurveda texts have given a detailed account of psychopathological aspects of sleep, says Caraka- 'When the mind including sensory and motor organ is tired and all of them dissociate themselves from the data input (Viṣaya), sleep results.'

Yadā tu manasi klante karmātmānaḥ klamānvitāḥ।
Viṣayebhyo nivartante tadā sthapiti mānavaḥ॥ (13)

(Ca.Sū 21/35)

1.5.15 Psychic Constitution Mānasa Prakṛti

Prakṛiti born out of 'Pra' to mean 'effective' and 'Kṛti' to mean 'production' is essentially a word of Sāmkhya origin.

Ayurveda has more specially applied this term to the constitution comprehending both physical and mental characteristics.

Furthermore, Murthy (2004), adds, the constitution of the individual determines his susceptibility or otherwise to the different diseases, the pattern and general course of these diseases and overall prognosis. The genetic constitution as described in Ayurveda has two basic elements viz. Psychosomatic constitution (Dehaprakṛti), which is categorized on the basis of the body, i.e. Vāta, Pitta, Kapha and Psychic constitution (Mānasa prakṛti), which are, determined on the relative variation of three fundamental characters of mind (Mana) namely Sattva, Rajas and Tamas.

1.5.16 Common Features of Prakṛiti

(A) Sātvika Disposition

The men of Sattvika disposition are known for gentleness, forgiveness, benevolence, truthfulness, endurance, piety, willingness and readiness to share others' views, belief in religious matters, and selfless conduct.

(Su.Sā. 1/18)

(B) Rajasa Disposition

These individuals basically are excessively active and violent by nature. They are generally tense, anxious and troubled. They are proud, arrogant, lustful and ambitious. They have strong emotions and harsh temperament, are cruel by nature and known for uttering lies. Because of hyperactive nature, they are uninhibited both in their pleasure and anger.

(Su.Sā. 1/118)

(C) Tamas Disposition

This is characterized by inactivity, apathy and ignorance. They always look dejected, nihilistic and averse to virtuous living suffer from inertia, lethargy and excessive sleep.

(Su.Sā. 1/18)

1.5.17 Mind as Matter

In Ayurveda, mind has been admitted as Dravya, Caraka counts Mana as one among the nine Kāraṇa Dravyas (primordial elements) and also among Adhyātmadravyagunasamgraha (spiritual elements).

Mind is considered as Indriya by Cakrāpani:

Yadyapi manopi sukhādijnāṁ prati karaṇatvenendriyam ।

(Cakrapani, Ca.Sū. 8/4) (14)

In view of its extraordinary capabilities to co-ordinate both cognitive and connative organs, mind is called Ubhyātmaka by Susruta.

(Su. Sā. 1/4)

It appears that Ayurveda has considered mind as a super-sensual organ beyond perceptive capability of ordinary sense organs; but one, which works, in close proximity to regulate co-ordinate and control the activities of organs of sense, says**,** Murthy (2004).

1.5.18 Channels for Mind (Manovaha Srotas)

The term Manovaha srotas signifies the area of how of mental activities and is referred to in Ayurveda texts. Vitiation of these channels themselves or localization of aggravated Doṣās in these channels is implicated in a variety of psychological disorders

1.5.19 Vitiators of Mind (Cittamalā)

Ayurveda concedes instability (Rajas) and indolence (Tamas) as two primary vitiators. Ayurveda also conceives the concept of suppressible urges (Dhāraniya vega) whereas emotions like greed (Lobha), enviousness (Īrṣa), hatred (Dveṣa), jealousy (Mātsarya) and passion (Rāja) are considered vitiators. Ayurveda postulates emotional imbalance as the root cause of all psychological and psychosomatic illnesses and proposes measures to eradicate them says, Murthy (2004).

1.6 DISEASE ACCORDING TO AYURVEDA

According to Gupta (2000), Disease is referred as vyādhi, roga, āmaya, gada, takman, yakṣma, jvara and vikāra in Ayurveda. These synonyms cover the different aspects of vyādhi. i.e. physical, psychological and metaphysical, considerations. In Āyurveda the term has been defined by various writers but all of them have used it in the sense of a state, in which both mind and body are inflicted. Caraka regards that manas (mind) and śarīra alongwith the indriyas are the adhiṣṭhāna of vedana (pain). Āyurveda has emphasized on the inter-relationship between the mental and constitutional diseases. According to Caraka, the psychic diseases like Kāmādi and constitutional diseases like fever etc. reciprocally follow each other and occasionally occur together.

1.6.1 Causes of Diseases

The Āyurvedists have considered the subject of causes of diseases from different angles, says Gupta (2000).

Causes:

(1) (i) Incompatible correlation of Indriyārtha.
(ii) Volitional transgression &
(iii) Pariṇāma.

(2) The intrinsic causes of diseases.

(3) Other causes of diseases.

(1) (i) Incompatible Correlation of Indriyārtha:

Means the deficient, excessive and prevented use and incidence of senses. i.e. the five organs of senses and five organs of action.

Caraka has described the ayoga (deficient), atiyoga (excessive) and mithyā yoga (prevented) incidences of each Indriyartha (senses) separately. The consideration of hypo, hyper and para-functions of sense organs have been also found in the description of abnormalities of cognitive process in the felt of psychodynamics of abnormal behavior in modern medicine.

e.g: To gaze inordinately at excessively luminous objects (sun, fire etc.) is the excessive use of vision; while it is the misuse of it to gaze at objects, that are either too close or too remote, or to view the hateful or alarming scene and the deficient use will be called not to look at the things, which are to be observed in routine.

(ii) Volitional Transgression:

It is Prajnāparādha – to Āyurveda. It is- the prevented use of mind and intelligence (Buddhi). Buddhi is called 'sad-asad vivekini'. The discrimination and judgment capacity of human being is related to wisdom, intelligence or understanding which is known as prajñā. The defective application of prajñā is actually responsible for the indulgence of man in the unwholesome qualification of the five senses. Although asātmyandriyārthasamyoga is inclusive within prajnāparādha, however, they are not identical. In prajnāparādha, the violation of manas (mental and emotional offenses), sarira and vak are also included because after all it is also responsible for such types of transgressions. The misuse of mental faculties consist of giving way to fear, grief, anger, greed, infatuation, self conceit, envy, deluded thinking etc. these emotional faults must definitely have their ill-effects on the organism and thus they are also responsible for the productions of diseases says, Gupta (2000).

According to Murthy (2004), this state is known as Smṛitibhrams'a (impaired memory). Impaired memory in association with impaired intellect. (Dhibhrans'a)

and impaired fortitude (Dhrtibhrans'a) aggravates all the Dosas. This is known as prajnāparādha (intellectual blasphemy) and is considered as one among there principal and fundamental causative agents of the diseases in general as postulated in Ayurveda.

Dhīdhr tismr itivibhrastah karma yatkurutes'ubham ।

Prajnā̃paradham tam vidyāt sarvados aprakopanam ॥ (15)

(Ca. Sā. 1/102)

(iii) Parināma:

i.e the deficient or excessive or prevented incidence of the seasons.

(2) The intrinsic causes of diseases:

Dosās are the actual intrinsic factors causing morbidities. According to Caraka, Dosās (Vātā, Pittā, Kāphā, Rājās, Tāmās) moving in the whole body produce good and ill effects on the entire system according as they are normal or provoked.

(3) Other Causes of Diseases:

Sus'ruta regards diseases of four factors

Kinds viz. (i) Āgantuka: caused due to traumatic

(ii) S'āririka: due to the use of deficient prevented or excessive food.

(ii) Mānasika: in detail

(iii) Svābhāvika: are hunger, thirst, old age and death

Mānasika:

According to Sus'ruta, Mānasika rogās (Psychic diseases) are caused by the Psychic and emotional dosās like kāma, krodha, bhaya, harsa, visāda, irsyā, manodainya, icchā and dvesa etc.

1.6.2 Measures To Attain Ideal Health

According to Gupta (2000), the overall appraisal of Āyurvedic literature shows that the measures for attaining an ideal health can be summed up as follows: -

1. Diet:

The body is the product of food, the distinction of happiness and sorrow results from the distinction of wholesome diet.

2. Use of rasāyana (Rejuvenation):

A great importance has given to Rejuvenation therapy in Āyurveda and it is regarded one of the specialized branch of medicine. Caraka observes that, he who makes use of Rasāyana, in the prescribed manner, not only attains longevity on the earth, but after dying, goes by the auspicious way of the divine sages and reaches the immutable brahma itself. Rasāyana therapy, among others undertakes to promote excellence of memory:

Dīrgham āyuh u smr iti medham ārogyam taruna m vayah ।

Prabhāvarn asvarodarya m dehendriyabala m param ॥

Vaksidhdhi m pra n ati m kantilabhate n ā rasāyanāt ।

Labhopayo hi s'astanām rasādīnam rasāyanām ॥ (16)

(Ca. Ci 1/7-8)

3. Following the Tr̥-upastambha of life viz.:

(1) Proper Āhāra (diet)

(2) Proper Nidrā (sleep)

(3) Brahmacarya

4. Following the regimen of life according to Deśa, Kāla and Prakrti

5. Following dietic and behaviouristic regimen according to Ṛtu (seasons) and to follow the health rules meant for Dinacaryā and Rātricary. A great emphasis has been given in Āyurveda on these aspects of personal hygiene for the improvement of ideal health.

6. Follow up of dhārāniya and adhāraniya vegās (suppressible and unsurpassable urges)

7. Avoidance of Sāhasa (excessive or overwork)

8. Right conduct and moral and ethical duties- are also regarded promoter of health.

9. Mental and intellectual methods: -

The following are the mental and intellectual methods for attaining an ideal health.

(a) Sātmya – Indriyārtha – samyoga.

(b) The right use of manas, and intellect as the excessive, deficient and erroneous use of the mental and intellectual factors causes disease.

(c) Noprajnāparādha.

1.7 HUMAN CONSTITUTION ACCORDING TO AYURVEDA

According to Ranade and Deshpande (2004), here constitution means something we born with, or what are we made of, how have we come to be as we are. As Ayurveda says the physical universe and everything in it is comprised of the five great basic elements. They are known as 'Panchmahabhuta' means basic five elements responsible to construct any entity. i.e.

Akash (Space)
Vayu (Air)
Agni (Fire)
Aap (Water)
Prithvi (Earth)

When these elements become activated in the body they join each other to form three homours (Doshas) viz. Vata (Air energy), pitta (Fire Energy), and kapha (water Energy). Vata from air+ether. Pitta from fire + water and Kapha from water and earth principles.

After extensive investigations on the nature of three humors biochemically they are similar to the three basic neuro humours viz.
Acetylcholine = *Vata*,
Catecholamines = *Pitta*
Histamine = *Kapha*.

Acetylcholine is a neurohumour, which is released and transmitted in the cerebral cortex and the nerve endings of all the spinal nervous system. It has extensive of the para-sympathetic nervous system. It has extensive

connections between the brain and the rest of the body; it is the most important and sensitive neurohumour of our body.

Pitta has been equated with catecholamines such as adrenalin and noradranalin. They are mainly in the hypothalamus, adrenal medulla and also at the nerve endings of the sympathetic nervous system.

Similarly, Kapha has been equated with histamine, which is released in the brain stem and also in all the tissues of the body in greater or smaller quantities, especially in the skin and the respiratory and gastro intestinal systems.

These three neuro humors are present all over the body. Their main releasing center is in the brain. They control all the functions of various organs and tissues. In the event of too much stress and strain of life, they are first components, which are disturbed in the body and they lead to the various changes in the body functions. Vata, Dosha first disturbed and it leads to various chain reactions in the body**.** Kulkarni (2000).

Within the body structure formed by these elements, three energies or humors known in the Ayurvedic tradition as 'Doshas' govern function:

The balance or imbalance of these three Doshas in the body of determines health and disease. Individual constitutions (physical, mental and emotional) reflect a personal and unique mix of Vata, Pitta and Kapha.

Ayurveda provides a special language for understanding the primal forces of Nature and shows us how to work with them on all levels. There are three basic gunas according to Ayurveda, which are psychological determinants.

(1) Sattva – (Intelligence balance)

(2) Rajas – (Energy, activity)

(3) Tamas – (Substance, inertia obstruction)

The three gunas are the most subtle qualities of nature that underlie matter, life and mind. All objects in the universe consist of various combinations of the three gunas. These three qualities are also known as ‘Prakruti’

Imbalance or malfunctioning of Doshas and gunas result into diseases or disturbances when well balanced, the Doshas exert positive mental emotional effects, and otherwise they manifest as negative qualities, traits or attitudes.

Table-1.4

The Doshas and Mental States

VATA

Positive	**Negative**
Active	Anxious
Creative	Depressed
Friendly	Insecure
Clear	Ungrounded
Inspire	Restless
Flexible	Unstable, Fearful

PITTA

Positive	**Negative**
Knowledgeable	Critical
Decisive	Angry
Ambitious	Envious
Discriminating	Jealous
Logical	Irritable Judgmental

KAPHA

Positive	**Negative**
Peaceable	Possessive
Loving	Loving
Compassionate	Acquisitive
Caring	Overly attached
Inclusive	

As mentioned above ‘anxious’ is a negative state of mind as a result of Vata disturbances. So if one wants to control or cure anxiety Vata dosha's treatment should be done.

According to ancient sages of Ayurveda ‘Vathas Aushadhies’ means herbs, which eradicates excessive Vata dosh from the body and should be administered to control abnormal psychological behavior.

‘Brahmi’ is known as the most important and useful medicine to control mental abnormalities in Ayurveda.

1.8 GENERAL METHODS OF TREATMENT OF MENTAL DISEASES ACCORDING TO AYURVEDA

According to Ayurveda, mind is one of the substratums of diseases having its own dosās raja and tama. Mental diseases have been classified into rājas and tāmas groups.

The examination of sattva (mind) has been greatly emphasized and determination of psychic personality is regarded essential to the treatment of a patient. The examinations of emotional factors (mānsika bhāvās) and the importance of mental characteristics for determining the prognosis of disease have been vividly described in Āyurveda adds, Gupta (2000).

Dhī dhairyātmādivijñānam Manodosausadham param।

(As.Hr Su. 1/26) (17)

Manaso jñānavijñānadhairyasmṛti samādibhiḥi। (18)

(Ca. Su. 1/58)

1.8.1 Classification of Treatment

The methods of treatment in Āyurveda are generally classified into three groups-

(1) Daivavyāpāśrya
(Divine therapy or treatment by faith.)
(2) Yuktivyāpāśrya
(Scientific therapy or treatment upon reasoning.)
(3) Satvāvajaya
(Psychotherapy – treatment by self-contred.)

(1) Daivavyāpāśrya: -

Actually human psychology has remained almost constant since the remote past and faith has become part and parcel of our psychology. Treatment is a play of faith and if the patient has got not faith in the medicine and the method of treatment, he cannot be cured, inspite of best treatment says, Gupta (2000).

The term Daivavyāpāśrya is concerned with all the unknown circumstances, which are beyond the purview of reasoning.

In Āyurveda, Deva has been used in the sense of those karmas, which are related to our previous life. The evils of our past life karmas cannot be curved by the scientific methods of medicine etc. because the diseases, so happened, are related to our past deeds. As we believe in puravajanma, it is a rational need to devise methods, which can effectively deal with Daivakrit disease, which are not in any way related to our present life. These Daivavyāpāśrya methods create confidence and remove the fearing and pessimistic tendencies. And if so much can be achieved it may in some way indirectly help the patient in gathering

confidence. The following treatment in the shape of good deeds is recommended for diseases caused by deva. (C.S. I 11.54)

1. Mantra
2. Au s adha .
3. Ma n i .
4. Mangala
5. Bali
6. Upah ā ra
7. Homa
8. Niyam
9. Pr ā yas'citta
10. Upav ā sa
11. Svastyayana
12. Pra n ip ā ta .
13. Y ā tr ā gamana

(2) Yuktivyap ā s'rya Cikits ā : -

Method with which Ā yurveda is mostly concerned. It depends upon reasoning out the causes of diseases and on divising with proper administration of medicines and prescribed suitable diets and other physiological and pharmacological methods. By this method we remove the pathogenesis and in it we treat the cause.

The Yuktivyap ā s'rya cikits ā can be sub-classified as below.

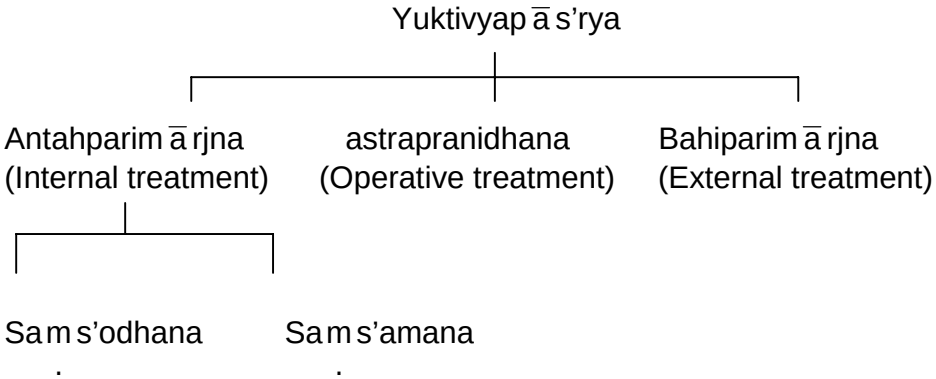


Figure: 1.2 Types of Yuktivyap ā s'rya cikits ā

(3) Sattavāvajaya Cikitsā: -

Caraka defined it as a mind control therapy in which a stress has been laid on restraining of mind from unwholesome arthas (objects). It therefore, includes all the manonigraha and yoga methods. Although, yuktivyapāśrya treatment have been prescribed for mental diseases, the inclusion of sattavavajya treatment within these primary classifications of treatment of disease, clearly indicate that this therapy of manonigrah was adopted in those days as a practical therapy to come over the mental disease. Now in western countries, the psychoanalysis therapy has been revived which may be a vague attempt in the direction of treating the mind directly.

According to Gupta (2000), sattavāvajaya is a specialized therapeutic procedure which aims at restraining the mind from unwholesome objects and subjugating it to achieve cure of psychological ailments.

1.8.2 Methods of Treatment of Psychic Diseases

Daivavyāpāśrya Cikitsā, described in Atharva-Veda, to deal with demons, witchcrafts is also accepted in Āyurveda for various mental diseases. It is difficult to explain the efficacy of these measures but it is sure these measures are still in practice. The treatment induces faith and confidence in the patient.

The samśmsodhana (purifying process) is also prescribed for many mental diseases. The five process of purifying the body is collecting known as pañcakarmas.

i.e.

(1) Vamana

(2) Virecana

(3) Anuv ā sana Vasti

(4) Nirooha Vasti

(5) Nasya

It has been found that the patients suffering fro very chronic diseases have been cured at Āyurvedic institutions by applying pañcakarma therapy. It gives encouraging results in mental diseases too.

In modern psychiatry, we can include following in transformation method.

(i) Symptomatic Treatment:

The use of sedatives to provide a period of continuous sleep up to twenty out of twenty-four hours a day, is a technique sometimes indicated in the treatment of severe anxiety.

Caraka regards that body depends on sleep as much as on food. The treatment of insomnia is given separately in Āyurveda (c.s. I 21.51.54). In which in action of the body, oil massage, bath, meat-juices, special diets and medicines etc. have been prescribed.

(ii) Tranquillizing Preparations:

Many of Ayurvedic drugs and Rasayan therapy may take place of tranquillizing preparations used in modern medicine.

(iii) Specific Treatment:

Mostly the antidepressant, anti-recessive and anti delirium drugs are prescribed in modern psychiatry. There are more than hundred herbs prescribed in Ayurvedic texts to combat mental disorders. A few of them are- Brahmi, Sankhapuspi etc.

1.9 PSYCHOLOGICAL METHODS OF TREATMENT ACCORDING TO AYURVEDA

Caraka prescribes the following methods of treatment of mental diseases:- (C.S., 1, 11, 4-47)

1. Jn̄ān̄a
2. Vijn̄ān̄a
3. Dhairya
4. Samādhi

Rao (1997) believes that the beginnings of mental health in India predate the period of the Indus valley civilization. In South Asian region in India, Indian system of medicine- 'Ayurveda' is considered as an important health care approach. As far as the physiological part is concern ancient Indian medical sages Caraka and Susruta (6th century b. c.) have also shown the importance of mental diseases as well as physiological diseases.

Life is divided into four kind according to Caraka, says Dasgupta (1932), like…

(1) *Sukham Ayu* (happy life)

(2) *Dukham Ayu* (unhappy life)

(3) *Hitam* (good)

(4) *Ahitam* (bad)

Here, 'Sukham Ayu' is life, which is not affected by physical or mental disorders and is endowed with all sorts of enjoyments and success. The opposite of this is 'Dukham Ayu', says Kuppuswami (1985). This refers to mental disorders or disturbances for which Caraka illustrated the classical treatments or methods of interventions in Ayurvedic medicine as follows…

(1) *Daiva vyāpas'rya* (Divine)

(2) *Yukti vyāpas'rya* (Medicinal)

(3) *Sattavavajaya* (Mental control)

Here, the second method of intervention or medical treatment 'Yukti *vyāpas'rya*' is considered for the present study.

Yukti vyapāsryam- samsʹodhanopasʹamane cestāsʹca
dṛstaphalāha ।
Etaccaiva bhesajaman abhedādapi dvividham- Dravyabhutam,
adrayabhutam ca॥
(Ca. Vi. 8/87) (19)

Further more Caraka adds in to '*Sutra Sthan*' about specific medicinal treatment as follows…

Tatra budhdhimatām nasvyādhiparī- tenāpi satā budhdhayā
Hitāhitamvekṣyāvekṣya dharmārthakāmānām
hitānamupasevane hitān am
Copasevane prayatitavyam, ta hyantaren a loke
Trayametatmānasam kincinniṣpadyate sukham va dukham va;
Tasmādetaccāmuṣtheya- tadvidyānām copasevane
prayatitavyam, ātmadesʹakulkālbalsʹaktijñāne yathāvacchet
(Ca. Su. 11/46) (20)

In present research anxiety is the core psychological problem to be treated by two different methods. It is necessary to understand the Indian psychological point of view on anxiety.

1.10 INDIAN PSYCHOLOGICAL VIEW ABOUT ANXIETY

According to Sinha (1986), different definitions of 'anxiety' according to Indian psychology can be described as follows:

(1) Nīlkaṇṭha defines *'anxiety'* as be-wilderment caused by fear.

(2) Madhusūdana and Veṅkaṭanātha define *'anxiety'* as a mental mode, which is in the nature of be-wilderment (vyākulatā), and which is evoked by a situation that threatens one's life and security. For instance, when a person finds himself in a lonely forest alone without any means of subsistence, he experiences mental confusion called anxiety.

(3) Kes'ava Kāś'mīrī and Sadānanda also regard *'anxiety'* as mental perplexity.

(4) S'rīdharasvāmī and Daivajña Paṇḍita Sūrya define *'anxiety'* as mental agitation (cittakṣobha) due to fear and the like emotions.

(5) Dhanpatisūri defines *'anxiety'* as solicitude which is evoked when a person is attacked or threatened by wicked persons.

(6) Rāghavendra defines *'anxiety'* as a kind of trembling of the mind (manaḥkampa).

(7) Vallabha defines *'anxiety'* as brooding (cintā) which is caused by encountering a hostile agent.

(8) Saṅkarānand regards *'anxiety'* as an emotion, which is evoked in a person when he is confronted with an evil, which is a cause of death.

(9) Vedānta-des'ika Veṅkaṭanātha avers that *'anxiety'* is evoked by the abusive language of a malevolent person even though he does not inflict injury on one.

Many experimental psychologist and psychological are now taking interest on doing research work on medicines like brahmi, s'ankha puṣpī etc.

A number of Indian indigenous drugs are reported to health curative effects on stress related psychological as well as psychosomatic and hormonal disorders. For example, a class of Ayurvedic drugs known as *Madhya Rasayanas* are popularly used as nervine tonics and as remedies for the treatment of mental disorders. Similarly, *Amalaki Rasayanas* and *Amalk Rasayana* are reported to be the best indigenous drugs for the treatment of peptic ulcer and traumatic stress, says Pestonjee (1992).

Sing et al (1977), tested the anti-anxiety effect of four Indian indigenous drugs suck as *Sankhapuspi* (Convolvulus pluricaulis), *Brahmi* (Bacopamounieri) and *Mandukaparni* (Hydrocotyle asciatica) and *Asvagandha* (Withania somnifera). The findings of the study revealed that these drugs reduced the level of anxiety, neuroticism and mental fatigue. Second, these drugs improved memory and performance pattern in patients suffering from anxiety neurosis. Third, a significant clinical relief from insomnia, nervousness, palpitation, tremors and irritability was noted in patients following treatment with these *Madhya Rasayana* drugs. Last, in the experimental study, the authors noted that some of these drugs influenced the neuro-chemistry of the brain in rats in terms of changes in the whole brain tissue level of acetylcholine, catecholamines, histamine and serotonin.

Universe is composed of five basic elements viz. Earth (Prithvi), Water (Aap), Fire (Agni), Air (Vayu) and Ether (Akash). Our body is composed of these five elements. When these elements become activated in the body they join each other to form three homours (Doshas) viz. Vata (Air Energy), Pitta (Fire Energy), and Kapha (Water Energy). Vata from air + ether. Pitta from fire + water and Kapha from water and earth principles after extensive investigations on the nature of three humours biochemically they are similar to the three basic neuro humours viz. acetylcholine=Vata, Catecholamines=Pitta and Histamine=Kapha.

Five elements means ‘Panchamahabhutas’.
Vata, Pitta and Kapha are the three forces acting in the body and known as tridoshas.

It is now well established that acetylcholine is a neurohumour which is released and transmitted in the cerebral cortex and the nerve endings of all the spinal nerves and also the nerve ending of the para-sympathetic nervous system. It has extensive connections between the brain and the rest of the body. It is the most important and sensitive neurohumour of our body.

In present research one of the methods of intervention is brahmi- an ayurvedic medicine. Brahmi’s details are discussed below.

1.10.1 Overview of Brahmi

Brahmi (Bacopa Mounieri), also known as Water Hyssop, is prominently used in Ayurveda, a holistic system of medicine originating from India, Historically, the use of Brahmi dates back to approximately the 6th century AD. Today, practitioners of Ayurveda recognize Brahmi as an adaptogen, a physiological agent that naturally increases the body’s resistance to physical and emotional stress.

Modern research indicates that the active components derived from Brahmi provide positive support for:

- Occasional anxiety and panic
- Mental and physical fatigue
- Cognitive functions such as memory and attention
- Immune system response

Brahmi is well tolerated and maintains an excellent safety profile. To date, medical literature confirms that there have been no adverse events related to the use Brahmi as a dietry supplement in adults. With continued use, Brahmi may help to maintain important cognitive functions. [(b)]

[(b)] **www.clarocet.com**

1.10.2 Pharmacology of Brahmi

Modern research has categorized several groups of phytochemical components, which are thought to contribute to the pharmacological activity of Brahmi:

- Bacosides
- Alkaloids
- Glycosides

The majority of contemporary research has focused on the broad-spectrum of activity Brahmi demonstrates in the Cental Nervous System (CNS).

Recent pharmacological studies indicate that Bacosides, the primary components of Brahmi, enhance nerve impulse transmission, which may help to improve concentration, attention span, learning, and memory as well as other higher order cognitive functions.

Preliminary laboratory results also suggest that Brahmi influences that production and availability of the neurotransmitter Serotonin.

Brahmi has been identified in clinical analysis as an adaptogen that increases the body's resistance to a wide range of chemical, biological, and physical stressors.

Scientists explain that Brahmi likely affects multiple body systems to promote emotional well-being, physical endurance, and mental sharpness. [(b)]

1.11 DETAILS OF BRAHMI

Table-1.5

Details of Brahmi

Latin Nomenclature	Bacopa monniera (Linn.) Wettst
Synonyms	Herpestis monniera (Linn.) HB&K Grahola monniera Linn. Moniera cunerfolia Michx.
Vernacular Names	Hindi: Brahmi, Jalneem, Kapodvanka, Somwalli, Sarsvati
Bengali	Brahmi shak; Udhavni
Marathi	Brahmi
Gujarati	Khandbrahmi
Telugu	Shambrani; Chettu
Tamil	Nirabrahmi
English	Bacopa
Family	Scrophulariaceae

1.11.1 Form

Brahmi is a perinnial creeping plant found in India in wet, damp and marshy areas. An infusion of the plant has been used in Indian folklore as a nerve tonic (Chopra et al 1956).

According to National Medicinal Plants Board Ministry of Health & Family Welfare Department of AYUSH, Government of India, a creeping succulent herb branches profusely and rooting at the nodes. The succulent leaves are sessile, opposite decussate, obovate-oblanceolate in shape, 1.0-2.5 cm x 0.4-1.0 cm in size. It is found in damp or marshy areas near streams or on the border of ponds, throughout India.

COMMON NAMES: Brambhi, Safed Kammi, Jal-Nim & Brami.

LOCATION: Uttar Pradesh, Punjab, Haryana, Bihar, Bengal, Tamil Nadu, Kerala, Karnataka, Foot hills of Himachal Pradesh & Uttaranchal.

CULTIVATION

Cultivation details of Brahmi is discussed below.

SOIL AND CLIMATE:

The plant is known to grow under varying soil and climatic conditions. It grows exceptionally well in poorly drained soils and waterlogged areas under sub-tropical conditions. The plants grow faster at high temperatures (33-40^0 C) and humidity (65-80%) and should be cultivated as summer-rainy season crop.

LAND PREPARATION:

The field should be ploughed thoroughly and made free of weeds. The land should be irrigated a day before planting for successful establishment of plant cuttings.

TRANSPLANTING:

Plant cuttings about 4-5 cm long, each containing a few leaves, nodes and roots are ideal planting materials. These can be obtained by cutting mother plants into small pieces with roots. The cutting are transplanted in wet soil at spacing of 40 cm x 40 cm. Flood irrigation is provided immediately after planting. Ideally, the plants should be transplanted in March-June and allowed to grow and proliferate through hot and humid months of monsoon till September after which harvesting should be done. The plants can also be maintained in a perennial state with two harvests in a year, the first one in June and the other one after monsoon, in October.

IRRIGATION:

Irrigation immediately after transplanting is essential for the successful survival of the plants. Subsequently, the fields are irrigated by flooding as per requirement usually every 7-8 days. There is no need for irrigation during the monsoon.

YIELD:

The fresh and dry herb yields of Brahmi go upto 300q/ha and 60/q/ha, respectively, when harvested after September while bacoside-A yield can be as much as 85kg/ha. After the first harvest, 40q dry herb yield from the June harvest, totalling to 100 q dry herb yield in a year will be obtainable. [(c)]

Sharma (1996), describes Brahmi's medicinal details as below. It is found as a plant, which may live from one to three years. Its stem is comparatively long, and has got rounded leaves, which are kidney measuring 0.5-2.5 inc. broad, which tastes bitter, as raw. Reddish flowers can be seen in spring season. During summer, tiny fruits measuring 1/8 to 1/6 inc. can be seen. Roots are very tiny and thread like.

1.11.2 Availability

It originates in India and Srilanka at ground level to 2000 ft. of height. It is usually found on the banks of rivers and other natural water reservoirs.

1.11.3 Chemical Constitution

It contains mainly Hydrocotyline, (C_{22} H_{32} O_8 N). A Glycoside named Asiaticoside is found in its fresh leaves up to 0.7 to 0.12 grain. Above all vallerine, peptic acid, fatty acids, tannin, ascorbic acid, sterol and little vaporizing oils are also found.

[(c)] **www.nmpb.nic.in**

In addition to the bacosides A and B already mentioned, *Bacopa* contains a wide variety of medically active substances, including stigmasterol, sapogenins, and flavonoids. Other compounds include triterpenoid saponins and other alkaloids (nitrogen-based organic substances), such as brahmine and herpestine. *Bacopa* also contains D-mannitol, betulic acid, beta-sitosterol, octacosane, nicotine, and amino acids such as alpha-alanine, aspartic acid, glutamic acid, and serine. Each of these ingredients imparts its own special enhancements, as a review of the literature shows.

1.11.4 Characteristics

Table-1.6

Basic characteristic of Brahmi

Guna:	Laghu
Ras:	Tikata
Anuras:	Kasaya
Vipak:	Madhur
Virya:	Shit
Prabhav:	Medhya

Brahmi himā sarā tiktā laghu hu medyā ca s'italā ।
Kas ayā madhurā s wadupā kayusyā rasāyanī ॥ (21)
(Bhāv prakas')

1.11.5 Applications

(A) Behavioral

As nervine tonic

For improving stress adaptation

Reduction of anxiety and nervous tension

Improvement in cognitive functions

To reduce concentration difficulties due to stress

Attention deficit hyper activity disorder

Age related mental deterioration

Anti epileptic

(B) Others

As blood purifier

Anti inflammatory

Irritable bowel syndrome

Skin disease like- psoriasis, eczema, rashes, boils, ulcer etc.

Dyspepsia

Generalized weakness

1.11.6 Adverse Effects Due to Improper Management

Overuse may induce headache, hallucinations, and depression, skin irritations.

1.11.7 Clinically Usable Parts of Brahmi

(1) Roots
(2) Stem
(3) Branches
(4) Leaves
(5) Fruits

1.11.8 Historical Background of Brahmi

Brahmi is frequently mentioned in the religious, social and medical treatises of India since the period of Vedic civilization. Its antiquity can be traced to the time of Atharva Ved (c. 800 BC) where Brahmi finds a mention in the very first *richa* of the third chapter of Atharva Samhita (3.1). Later it also found a place in the compilation of teachings of the ancient Persian prophet Zoroaster (the founder of the Zoroastrian religion), i.e., Zend Avesta (c. 600 BC).

The various treatises of ancient India (known as *Brahmvart*) have laid emphasis on its many fold uses in curing various diseases. Particular emphasis is laid on the ability of Brahmi to cure mental diseases particularly its ability to improve mental potentialities. It is not clear why this plant was called Brahmi. But, because of its unique properties many eminent indologists have postulated that the origin of the word Brahmi is from Lord Brahma, the creator of the world and originator of Ayurveda.

1.11.9 Brahmi in Caraka Samhita

The first clear reference to the mnemonic properties of Brahmi is to be found in Caraka Samhita (c. 100 AD). Brahmi is enumerated under Prajasthapana Mahakasaya, i.e., the medicines used for creation of progeny. The sloka (verse) 10:62 describes Brahmi as beneficial for mental disorder leading mental impairment. Here mental disorder is mentioned as which has got wide connotation. The term means stress induced anxiety, leading to enfeeblement of mental prowess which induces weak intellect causing lack of concentration resulting in memory impairment. Hence, it is considered to be a great mental illness and can be cured by regular use of Brahmi, says Caraka Samhita.

Thus, Brahmi as described in the Ayurvedic classics written by Caraka, Sushruta and Vagbhatta is definitely a potent psychotropic drug to be used for promotion of mental faculties and for treatment of major psychotic disorders. [(d)]

1.11.10 Brahmi's Utility

Bacopa Monnieri, also known as Brahmi, is the foremost Ayurvedic herb that has been used for centuries as a nerve tonic. Brahmi has been used as an Ayurvedic rejuvenative to assist in mental activity, brain function and nervous exhaustion. It also assists in alleviating nervous exhaustion. Modern research shows that the herb contains steroidal saponins such as bacosides A and B,

[(d)] **www.bnlonline.com**

which have been shown in studies to improve memory and learning capacities. Brahmi also has a well-established tradition in the treatment of asthma, anxiety and epilepsy. The scientific validation of Brahmi, based on extensive clinical and experimental data, that learning and memory are closely associated with the functional status of the central cholinergic system is now known. According to this model, Brahmi was evaluated in the presence of substances known to have cholinotoxic effects associated with cognitive deficits. The results, recently published in an Italian journal, Fitoterapia (Vol. LXVI, No.3, pp. 216-222, 1995), indicate that Brahmi actively promotes cholinergic recovery, thereby facilitating central cholinergic mechanisms. This confirms Brahmi's effectiveness in promoting mental alertness.

However, the herb Brahmi is exceptional as it is recognized as a *tridoshic* balancing herb, which means it, is suitable for all body types. In particular, Ayurvedic physicians found that the Vata dosha, which governs the nervous system, benefits the most from the effects of Brahmi. It was through the success of these ancient medical practices over three thousand years ago that Brahmi was established as a powerful nervine and brain tonic.

Aside from increasing intellectual and cognitive function, Brahmi induces a sense of calm and peace in its users. It is unique in its ability to invigorate mental processes whilst reducing the effects of stress and nervous anxiety. This makes Brahmi extremely applicable in highly stressful work or study environments where clarity of thought is as important as being able to work under pressure. Many people have the intelligence to perform to strict standards, but lack the composure and self-confidence to reach them. Additionally, Brahmi helps soothe the restlessness and distraction that nervousness causes. As a nervine tonic, Brahmi has been used to help those affected by stroke, nervous breakdown or exhaustion and Attention Deficit Disorder. It may also be of value in assisting those with epilepsy. [(e)]

[(e)] **www.healthyhighway.com**

The plant of Brahmi is found throughout India. Brahmi helps in improving memory, in improving learning capacity; Brahmi also helps in relieving stress, strain and anxiety helping mind to calm down. According to scientific studies carried out by the 'Central Drug Institute of India' (CDII), the plant of Brahmi contains two active ingredients Bacosides A and B, which are the key elements that helps in increasing protein synthesis to create new protein in the brain cells. This helps in developing long-term memory cells faster and also helps them in growing healthier. The overall effect of the two elements is help in improving memory (long term and short term), higher concentration etc. Brahmi is useful in treatment of forgetfulness, restlessness, anxiety, insomnia etc. [(f)]

As per, Sharma (1996), an Ayurvedic medicine 'Brahmi' known in Latin language as 'Bacopa monniera' is used as a classical, sedative and tranquilizer regard to anxiety. Here, in present study, 'Brahmi' is used as an Ayurvedic treatment for anxiety because of its tranquilizing property as a medicine. According to pre-post design of the research, Ultimately Brahmi has shown anxiolytic (a drug that reducing anxiety) effects on research sample. The difference in the level of anxiety was measured on IPAT anxiety scale, which will be discussed further in detail.

The researcher has conducted an interdisciplinary study for the management of anxiety. Other than Brahmi one more method of intervention is used for the management of anxiety. This method belongs to modern psychological intervention technique. Hypnosis was used as a psychotherapeutic technique.

1.12 GENERAL METHODS OF TREATMENT OF MENTAL DISEASES ACCORDING TO MODERN BEHAVIORAL SCIENCE

Among modern behavioral sciences, one of the most important applied branches is clinical psychology. The roots of clinical psychology extend back to periods before the field was ever named and two prewar years when it appeared only in embryonic form. (Nietzel et al 1994).

[(f)] **www.buzzle.com**

It is very well known that first recognized clinical psychologist appeared, was Lightner Witmer (1867-1956) an American psychologist. The various methods of treatment employed for psychiatric care can be classified under the following headings according to Rao (1997).

(1) Psychopharmacological agents,

(2) Electro-convulsive therapy and other somatic methods,

(3) Psychological methods of treatments.

In present study a psychological method of treatment i.e. Hypnosis is used for the management of anxiety. Hypnosis is psychotherapy according to Ahuja (2002). Psychotherapy can be defined as the treatment by psychological means, of problems of an emotional nature, in which a therapist deliberately establishes a professional relation with the patient to,

(1) Remove, modify or retard existing symptoms,

(2) Mediate disturbed patterns of behavior, and/or

(3) Promote positive personality growth and development.

Psychotherapy can be conducted by either verbal or non-verbal means. There are several different kinds of psychotherapies. The important types are as below.

Table 1.7

Psychosocial Therapies

No	Therapy/School	Proponent
1.	Psychoanalysis	Sigmund Freud
2.	Analytical psychology	Carl Gustav Jung
3.	Transactional analysis	Eric Beme
4.	Client-centered psychotherapy	Carl R Rogers
5.	Hypnosis	James Braid
6.	Group therapy	Joseph Pratt
7.	Cognitive therapy	Aaron T Beck

8.	Cognitive behavior therapy	Donald Mechenbaum
9.	Behaviorism	John Broadus Watson
10.	Classical conditioning	Ivan Petrovich Pavlov
11.	Operant conditioning	Burrhus Frederic Skinner
12.	Dual sex therapy	William Masters Virginia Johnson
13.	Therapeutic community	Maxwell Jones
14.	Psychodrama	Jacob L. Moreno
15.	Rational emotive therapy (RET)	Albert Ellis
16.	Primal therapy	Arthur Janov
17.	Will therapy	Otto Rank
18.	Gestalt therapy	Frederich Perls
19.	Existential logo therapy	Victor E Frankl
20.	Reciprocal inhibition	Joseph Wolpe
21.	Progressive muscular relaxation	E. Jacobson
22.	Character analysis	Wilhelm Reich
23.	Token economy	Ayllon and Azrin

In present study the second method of psychological intervention regard to anxiety is ‘Hypnosis’ other than ‘Brahmi’.

1.13 HYPNOSIS

Hypnosis has been an interesting phenomenon as far as psychological treatment method is concerned. All hypnosis is ultimately self-hypnosis. This process required active participation and willingness of the subject (patient) to experience hypnotic trance. Hypnosis is a useful way to help patient strategically refocus their presenting problems, their approaches to present – day living and their stated goals. Kaplan and Sadock (1995).

Spiegel et al (2000), who devised the eye-roll sign for hypnotizability, defines hypnosis as a state of heightened focal concentration and receptivity. It is

typified by a feeling of involuntariness; movements seem automatic, and suggested perceptions can alter or replace ordinary ones. Hypnosis has also been described as an altered state of consciousness, a dissociated state, and a state of regression.

Orne et al (1996), defines hypnosis as a state or condition in which a person can respond to appropriate suggestions by experiencing altered perceptions, memory, or mood. The essential feature of hypnosis is the subjective experimental change. A pioneer in clinical hypnotic induction, Erickson et al (1976) described the process of a clinical trance as 'a free period in which individuality can flourish.'

1.13.1 History And Development of Hypnosis

A great number of ancient documents verify, hypnosis is one of the oldest psychological treatment methods, cuneiform writings that date back to four thousand years before Christ reveal that Sumerians used hypnosis as a therapeutic tool. Specially trained priest or doctors gave sufferers hypnotic suggestions, as did the later Hindu saints, the Persian healers and the Indian yogis. Ebers Papyrus, tells us that in ancient Egypt, priest or doctors would ask sufferers to fix their gaze on a glossy piece of metal to induce a hypnotic trance–a precursor of the fixation technique, which is still in use today in modern hypnotherapy.

The use of hypnosis for healing was employed all the way into the middle ages but it was not until 1530 that an explanation over than divine intervention was offered for the cures gained by hypnosis.

Paracelsus (1493–1541), a scientist and physician of Swiss origin developed a theory about the interrelationship between the stars and human disease processes and also about the magnetic powers man has over man.

Later, Mesmer (1734–1815), an Austrian physician developed the theory further by assuming that there was a universal fluid, which developed and pervaded the earth and all human beings and that the planers could bring about the change in the human body through this invisible magnetic fluid. Mesmer named the fluid 'animal magnetism'. He spoke of animal magnetism of universal fluids of the proper distributions of these fluids in the healthy body of the magnetization of inanimate material such as wood, metal and water of the importance of bodily stroking (passes), of the influence of the planets on man and of many other strange and mysterious things.

Mesmer suggested that disease or pain arose from an unbalanced distribution of the fluid in the sufferer's body. He posited that magnets with their power to attract and repel could help rebalance this fluid. Healing by touch and healing by stroking were other methods used at the time and Mesmer decided to combine all these measures in order to cure his patients. Mesmer would have his patients hold a piece of metal to the diseased or painful part of their bodies, and while they did so he would touch their bodies with a metal rod, claiming that this would redistributed the magnetic fluid and thereby facilitate a cure.

In 1813, A. Faria (1755-1819), corrected Mesmer's theory by stating that, according to research he had conducted in India, there was no need for a universal fluid to induce trance it was the power of suggestions that achieved the sleeplike state. This new theory was also supported by Alexander Bertraned, an eminent French Physician, who added that it was not so much the person who gave the suggestions but the influence of the patients imagination that brough about the result.

A Scottish physician, Braid (1795-1860), developed this theory further. Braid found that the trance like state was quite genuine and that people could go into this state quite naturally after fixing their gaze on a shiny object for just a few minutes. He was first person to use the term 'hypnosis' (from *'hypnos'*, the Greek word for 'sleep') in the 1840s. Braid, said by many to be real father of

modern scientific hypnosis, had in edition to coining term hypnosis, rejected the idea of animal magnetism and stressed the role of suggestions in the procedure. ‘Hypnos’ also indicates *‘Greek God of Sleep’*. He obtained excellent results in medical and surgical cases and consequently read a paper on the subject to the Advancement of science.

In the late 19th century the French neurologist Charcot (1825-1893), considered the hypnotism a special psychological state. His contemporary Bernheim (1840-1919) believed it to be a psychological state of heightened suggestibility. He founded the school of Nancy, there by creating the first institute for the scientific application of the hypnosis. In 1886, Bernheim published a book *De La Suggestion* (About Suggestion) that laid the foundation upon which modern suggestion therapy is based. Later he considered hypnosis as a special physiological state also.

Nearly at the same time, Breuer (1842-1925), a Viennese Physician, discovered by chance that if he encouraged his patient to speak freely in hypnosis they could recall events, which they could not remember in normal state. As a consequence of recalling repressed traumatic events, the patient experienced a result of hypnotherapy. Convinced subjects enter easily into trance because of their receptivity to the procedure.

The father of psychoanalysis Sigmund Freud (1856–1939), who had studied with Charcot and had worked with Breuer and based some of his work on Breuer’s findings.

With the work of Joseph Breuer and Sigmund Freud and by the chance discovery made by one patient. Bertha Pappenheim, hypnotism became hypnotherapy. In her spontaneous regression she was able to talk about her problems and to liberate the ‘strangulated affects’, the suppressed emotions of those painful memories which had been repressed below the level of conscious awareness and which had precipitated her symptoms. Thus the new technique

of treatment, by dynamic exploration (later also called hypnoanalysis), i.e. by discovering the cause of illness, was evolved. Later he found that sometimes it was difficult to overcome his patients' resistance to releasing traumatic memories. Freud ultimately left hypnosis behind to concentrate on the development of his Psychoanalysis theory. But hypnosis continued to enjoy steady progress. Waxman, (1989).

During and after the first world war, hypnosis was applied increasingly to help soldiers overcome the combat traumatic stress.

In 1953, a subcommittee to the British Medical Associations was founded which started investigating hypnosis as an adjunct to medicine. A great deal has been discovered since then about the working and function of sub-conscious mind and how it influences the way human beings reach and behave. The subcommittee found that hypnosis was a very useful tool when it came to treating psychosomatic and psychoneurotic disorders, as well as being great help in surgery, dentistry and obstetrics as pain reliever. The committee also suggested that the subject of hypnosis should be included in the training of psychiatrists. The American Medical Association gave its approved in 1956 to hypnosis as a useful treatment method.

Today, hypnosis is used successfully not only in surgery and dentistry and as an effective psychotherapeutic tool. Hypnosis is used as a form of therapy; a method of investigation to recover lost memories and a research tool. (Sadock and Sadock 2003).

In clinical Psychology hypnosis has already proved its efficacy and usefulness as psychotherapy, so has been attempted in present study.

1.13.2 Various Definitions of Hypnosis

(1) ‘Hypnosis is a trancelike mental state induces in a cooperative subject by suggestion.’

- Carson, Butcher and Mineka (2003)

(2) ‘A special psychological state with certain psychological attributes, resembling sleep only superficially and marked by a functioning of the individual at a level of awareness other than the ordinary conscious state. This state is characterized by a degree of increased receptiveness and responsiveness as is generally given only too external realities.’

- The New Encyclopedia Britanica (15th edition)

(3) ‘Hypnosis is a state of ‘altered consciousness’ that occurs normally in every person just before entering into sleep**.** The state of altered consciousness is maintained by the therapist or hypnotist to remove stress, anxiety or unconscious conflicts. The induction of hypnosis is done with the help of strong and directive affirmations. These are called suggestions for hypnotherapy.’

- Augustine (2002)

(4) ‘Hypnosis is a complex mental phenomenon that has been defined as a state of heightened focal concentration and receptivity to the suggestion of another person.’

- Dhakrass and Pandit (2000)

(5) ‘Hypnosis is said to exist when suggestions from one individual seemingly alter the perceptions and memories of another.’

- Orne (1971)

(6) ‘Hypnosis may be defined as an altered state of awareness affected by total concentration on the voice of the therapist.’

- Waxman (1981)

(7) ‘Hypnosis is a state of heightened focal concentration and receptivity.’

- Spiegel (2000)

(8) ‘Hypnosis is the process of a clinical trance as “a free period in which individuality can flourish”.

- Erickson (1976)

(9) ‘Hypnosis can be described as an altered state of consciousness, a dissociated state, and a state of regression.’

- Sadock and Sadock (2003)

(10) ‘Hypnosis means the practice of causing a person to enter a state of consciousness in which they respond very readily to suggestions or commands. ORIGIN Greek hupnos ‘sleep’.’

- Compact Oxford Dictionary Thesaurus & Wordpower Guide (2006)

The person, on whom hypnosis is done, known as a ‘subject’. The subject is persuaded by the therapist to listen to his suggestions to induce a heightened state of selective attention. It helps subject to focus on therapist suggestions and or the same time ignore other irrelevant stimuli in the environment and involve fully in procedure willingness of subject for therapy is one of the most necessary condition to enter into ‘trance’ i.e. subconscious level.

The subject is asked to relax his muscles and body fully well before the induction of hypnosis. Then, he is asked to pay attention and concentrate fully on therapist’s suggestions. Here, willingness and co-operation plays important role. Suggestions are given to increase subject’s comfort and relaxation gradually. By repeated suggestions in a peaceful surrounding subject goes into deeper relaxation. The subject is encouraged to have an experience similar to that of a state prior to sleep. The subject starts to feel relaxation and ‘trance’.

In this study all misconceptions and fears were discussed and clarified before starting hypnotherapy. Some subjects who express their desire and willingness

to undergo hypnotic treatment showed title resistance, which was removed with proper rapport. Some subject showed fear that once if they are in a trance they may loose they're conscious control and talk about things, which they never wanted to reveal to anyone. They were convinced properly with prior counseling. They were explained about nature, importance, and uses of the hypnotic procedure.

1.13.3 The Procedural Steps of Hypnotic Induction

For hypnotic induction six gradual steps can be discussed.

A - Rapport

B - Selective attention

C - Relaxation

D - Expectancy

E - Trance

F - Suggestions

These are steps for every session done with subject. Here one should not forget that subject were having anxiety symptoms here Hypno therapy was started with deep breathing with induction and release of muscles first and then shifting to concentration in the center of subject's forehead. With this focused attention subject listens repeated soothing suggestion to experience trance and relaxation.

1.13.4 Trance Levels

Generally, there are three-trance depths. They are light, medium and deep.

(A) Light Trance

It is also known as state of "lethargy". Where subject experiences pleasant drowsiness. Voluntary movement is possible in this level. Mask

face of faint smile can be seen on subjects. Opening of eye on challenge is possible, subject achieve relaxation to some extent.

(B) Medium Trance

This state is also known as “catalepsy”. Its main feature is rigidity on suggestions. Here a voluntary movement becomes limited. Rigidity like waxy flexibility can be seen. Eyeball tarns upward and opening of eyes on challenge is not possible. Subject experience more relaxation than in light trance.

(C) Deep Trance

It is also known as ‘somnambulistic state’ subject may experience sleepwalking and talking sometimes. Voluntary movements become impossible subject may experience hallucinations, age regression, recall of lost memory etc. here opening of eyes on challenge becomes impossible subject experience a great extent of relaxation where awareness and reaction to surrounding becomes minimum.

Minimum level for hypnotherapy can be light trance. It present study 40 to 50% subjects were seen in light trance, around 30% in medium and rest were observed in deep trance which made no significant difference in order to gain result. All states helped patients (subjects) to experience a sense inexplicable pleasure and unexpected peace of mind, which strengthened the confidence of the patients. Ultimately it has shown anti-anxiety effects.

1.14 SUMMARY

In this chapter, following points have been established.

1. Introduction of stress and anxiety is given with the support of different definitions given by various investigators by which the core issue of present research is tried to establish.

2. An ancient scientific method of treating diseases i.e. Ayurveda has been discussed in detail. Being an ayurvedic physician present researcher found Brahmi as an effective possible treatment of anxiety in his clinical practice as mentioned in ayurvedic literature. This idea led him to taste its efficacy with the modern psychotherapeutic method.
3. Present study is an interdisciplinary approach between ayurveda and clinical psychology.
4. Well-known psychotherapeutic method of clinical psychology i.e. hypnosis is studied for anxiety reduction in present research.
5. Such studies required to be undertaken specially for a novel complimentary or adjuvant therapeutic approach for treating psychological disorder.

Researcher strongly believes that finding effective anxiety reduction methods is a prime need of the recent times. Present endeavor is one of the attempts to do so.

The purpose of this study is to find out the efficacy of above mention methods on anxiety and its factors, which are discussed further.

Present project is to find out the impact of above described treatment methods i.e. Brahmi and Hypnosis on anxiety reduction and also to find out weather age, gender and marital status play any role interactively.

According to pre-post design of the research, hypnosis also has shown anti-anxiety effects on research sample. The difference in the level of anxiety was measured on ASQ (IPAT anxiety scale), which will be discussed further in detail in next chapters.

CHAPTER-II

THE REVIEW OF LITERATURE

2.1 INTRODUCTION

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2.3.5 Comparison of Non-pharmacological Techniques to Reduce Anxiety

2.3.6 The Cognitive-Behavioral Approach with Hypnosis Regard to Anxiety

2.4 REVIEW OF LITERATURE AND PRESENT STUDY

2.1 INTRODUCTION

Anxiety should be understood by both the aspects, physical and mental. There are a number of different views available on this issue. In the present chapter the researcher has attempted to study relevant literature on management of anxiety in regard to Brahmi - An Ayurvedic Medicine and Hypnosis-A Psychotherapy.

Since ages, it has been always an interesting issue about the relationship between mind and body. Many philosophers have debated and discussed since ancient times. As per different schools of psychology, one of the important views is ‘mind-body dualism’, in which the mind and body are considered separate and distinct. However, it is believed that they both always interact and influence each other. As far as anxiety is concerned, it has both the effects, physical and mental. The theory of interactive dualism supports this manifestation of anxiety.

In the recent past, large numbers of researches were reported on therapeutic effects of Brahmi and Hypnosis on anxiety separately in foreign studies as well as in India.

The present study tries to emphasize alternative therapeutic treatment methods for reducing anxiety. As far as psychotherapy is concerned hypnosis is used for anxiety management, where Brahmi as an ayurvedic treatment. And hence the present study prepares a new path in this direction.

Here, the investigator tries to review the relevant literature to the title of the present study as below.

2.2 STUDIES ON IMPACT OF BRAHMI

Brahmi's efficacy for anxiety reduction, adjustment and memory span is studied through various researches in foreign countries as well as in India. Some of these studies have been summarized below.

2.2.1 Management of Anxiety and Brahmi

A study conducted by Singh and Singh (1980), which indicates relevant indications of Brahmi.

35 patients were treated for anxiety neurosis for four weeks. The dose was 12 gm per day of the dried plant of the syrup forms, for four weeks.

After treatment they were assessed for clinical anxiety levels, maladjustment levels, mental fatigue rate, and immediate memory span.

The results show that concentration and immediate memory span were significantly increased (p>0.05 and p>0.01, respectively) and anxiety level was significantly decreased (p>0.001).

The patients who took Bacopa (Brahmi) had a 20% reduction in anxiety level. Their maladjustment and mental fatigue were significantly lower than before treatment, and their immediate memory-span scores were significantly increased.

In other words, Bacopa improved memory and productivity by reducing anxiety and related problems. [g], [h]

This study supports the present research work indicating that Brahmi is useful to reduce anxiety. Moreover, Brahmi as shown its therapeutic effects for mental fatigue, immediate memory span and maladjustment levels. These can be considered as additional behavioral modifications by the use of Brahmi.

[g] **www.smart-publications.com**
[h] www.sabinsa.com

In present study the same form of Brahmi was administered to see its effects on anxiety for 12 weeks.

In present reviewed research, apart from anxiety other major symptoms were significantly improved, including nervousness, palpitation, insomnia, headache, tremors and irritability.

In present work also above said symptoms indicate overt, manifest or symptomatic anxiety. i.e. the B score of ASQ. The investigator has noticed the changes in this form of anxiety, which is discussed in chapter-4.

Sing et al (1977), tested the anti-anxiety effect of four Indian indigenous drugs such as *Sankhapuspi* (Convolvulus pluricaulis), *Brahmi* (Bacopa mounieri) and *Mandukaparni* (Hydrocotyle asciatica) and *Asvagandha* (Withania somnifera).

The findings of the study revealed that these drugs reduced the level of anxiety, neuroticism and mental fatigue. This study also broadly suggests the utility of Brahmi as an anti-anxiety agent.

Another Australian study stands to support the present investigation of the use of Brahmi for anxiety reduction.

Stough (2001), indicates in an Australian double-blind study, 46 subjects were given Brahmi. The findings show that after 12 weeks, the group that took Brahmi showed significantly reducing in anxiety.

Apart from this, A 13% improvement was noticed by investigator in learning and memory rates. But the most striking result was the significant reduction in anxiety in those who received Brahmi. [(g)]

2.2.2 Brahmi and Neurotransmeters

Some studies indicate Brahmi's effect on neurotransmitters. As Kulkarni (2000) mentions about the relationship between acetylcholine and *vata*, for anxiety reduction, *vata* should be treated. Brahmi's effect on *vata* is well known for therapeutic use. So as, anxiety can be reduced especially by the use of Brahmi and consequently by changes in the levels of various neurotransmeters.

Shukia et al (1987) have found Brahmi's effect on CNS. The study focuses on neurotransmeters like GABA, dopamine and acetylcholine, which have consequent effects on anxiety.

Researchers believe that, among its other mechanisms, Bacopa mediates the GABAergic system. Gamma-aminobutyric acid is an inhibitory neurotransmeter that has been shown to possess anticonvulsive, antinociceptive (prevention of pain due to hypersensitive nerve endings), locomotor and sedative effects.

Because Bacopa also has all these properties, it is reasonable to speculate that a similar mechanism of action explains its effects on the brain and the body. Like some other Gabaergic agents, Bacopa may be able to help protect against epilepsy by regulating the memory-transmission molecules that govern motor mechanisms and potentiate neuronal signaling: dopamine and acetylcholine. [(i)]

According to Pestonjee (1992), it is an established fact that physical stress, endotoxin shock and psychological stress are followed by an increased neuro-humoral response, which is responsible for subsequent endocrine and metabolic changes.

Further more, Pestonjee adds, it is an established fact that physical stress, endotoxin shock and psychological stress are followed by an increased neuro-humoral response, which is responsible for subsequent endocrine and metabolic changes.

[(i)] **www.life-enhancement.com**

Prasad et al (1977), synthesized two compounds (ayurvedic drugs) and studied their effect on the neuro-humoral response to whole body irradiation in rats. These compounds were administered to rats 24 hours before being exposed to irradiation. It was found that one of the two drugs was very effective and showed 100 percent survivals in comparison to irradiated control rat.

Further, various neuro-humors like acetylcholine, catecholamine 5-HT and related enzymes increased up to normal levels in comparison to the level observed in irradiated animals.

In addition, the histological and histochemical studies of the hypothalamus, pituitary, thyroid, adrenal and testes showed normal appearances. The findings indicated that this synthesized drug is the best preventive drug for whole body irradiation stress. The classical use of ayurvedic medicines on stress is supported by this study especially Brahmi like medicines.

2.2.3 Brahmi in Caraka Samhita

Here, it would be important to note that basic introduction of Brahmi is described as a nervine tonic and a stress reducer in ancient health care literature.

As described in the Ayurvedic classics written by Caraka, Sushruta and Vagbhatta, Brahmi is a potent psychotropic drug to be used for promotion of mental faculties and for treatment of major psychological disorders. [(d)]

Some government institutes in India have established Brahmi's efficacy, which is mentioned in Indian ancient health care literature. Let us, have a look upon it.

According to scientific studies carried out by the 'Central Drug Institute of India' (CDII) (2004), the plant of Brahmi contains two active ingredients Bacosides A and B, which are the key elements that help in increasing protein synthesis to create new protein in the brain cells. This helps in developing long term memory cells faster and also helps them in growing healthier. The overall effect of the two elements is help in improving memory (long term and short term), higher concentration, reduction in forgetfulness, restlessness, anxiety and insomnia etc. [(f)]

According to CDRI, as per Sing and Dhawan (1997), a study has been carried out to compare Brahmi and Lorazepam-a benzodiazapene on animals.

Anxiety and Depression, Bacopa's traditional use as an anti-anxiety remedy in Ayurvedic medicine is supported by both animal and clinical research. Research using a rat model of clinical anxiety demonstrated a Bacopa extract of 25-percent bacoside an exerted anxiolytic activity comparable to Lorazepam, a common benzodiazapene anxiolytic drug. But, the Bacopa extract did not induce amnesia, side effects associated with Lorazepam, instead had a memory-enhancing effect.

As per references, Brahmi has got tranquilizing property, which is discussed by many scholars from Caraka to modern investigators.

As per, Sharma (1995), an ayurvedic medicine 'Brahmi' known in Latin language as 'Bacopa Monnieri' is used as a classical, sedative and tranquilizer regard to anxiety.

A placebo-controlled, double blind study, tested the efficacy of Bacopa monnieri in children. For six weeks, 50 normal school children split into two groups were given Brahmi and placebo respectively.

At the conclusion, they were evaluated for attention, concentration, and memory. Brahmi shows improvement in all these aspects significantly. Scientific studies have also reported its use as anticancer, antihypertensive, tranquilizer and sedatives. [j]

So, here Brahmi's efficacy can be established on anxiety on the basis of previous mentioned related studies. Of course, as various investigators have said about Brahmi's effects as an anxiolytic, tranquilizing, sedative, memory enhancer and so forth.

The present researcher has considered Brahmi's anxiolytic effects as a core issue of the study.

2.2.4 Mental Alertness, Memory and Brahmi

Some studies indicate Brahmi's functions as nervine tonic and as an effective agent for cognitive functions improvement. This characteristic of Brahmi has been studied by various investigators.

Regarding Brahmi's effect on mental alertness, a study reported in an Italian Journal 'Fitoterapia' is mentioned below.

The scientific validation of Brahmi, based on extensive clinical and experimental data, that learning and memory are closely associated with the functional status of the central cholinergic system is now known.

According to this model, Brahmi was evaluated in the presence of substances known to have cholinotoxic effects associated with cognitive deficits. The results, published in an Italian journal, Fitoterapia (1995), indicate that Brahmi actively promotes cholinergic recovery, thereby facilitating central cholinergic

[j] **www.exoticnatural.com**

mechanisms. This confirms Brahmi's effectiveness in promoting mental alertness. [e]

Another study carried out in University of Wollongong by Roodenrys (2002) confirms that Brahmi also affects human memory.

Seventy-six adults aged between 40 and 65 years took part in the study in which various memory functions were tested and levels of anxiety measured. The results showed a significant effect of the Bacopa Mounieri on a test for the retention of new information. The effects on anxiety are not studied here. [k]

So, above said studies support Brahmi's function as a nervine tonic, which can be further, assumed its efficacy on CNS.

2.2.5 Studies Indicating Biological Effects of Brahmi on Specific Areas of Brain

According to Bhattacharya et al (2000), Brahmi showed anti-oxidant activity on specific areas of brain.

The effect of a standardized extract of Brahmi was assessed on rat brain frontal cortical, striatal and hippocampal superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPX) activities, following administration for 7, 14 or 21 days.

The results suggest that Brahmi exhibits a significant antioxidant effect after subchronic administration, which extends to the hippocampus as well.

The results suggest that the increase in oxidative free radical scavenging activity by Brahmi may explain, at least in part, the cognition- facilitating

[k] **www.bacopamonnieri.com**

action of Brahmi, recorded in Ayurvedic texts, and demonstrated experimentally and clinically. [I]

This study shows cognition facilitating action and anti-oxidant activity of Brahmi on the rats, which again depicts Brahmi's effectiveness on CNS.

Brahmi's effects on cognition can be hypothesized furthermore as an anxiolytic for humans.

2.2.6 A Study Showing Anti-stress Effects of Brahmi on Animals

A study carried out at ITRC India by Chowdhuri et al (2002), shows anti-stress effects of Brahmi on rats.

The anti-stress effect of bacosides of Brahmi (Bacopa monnieri), dissolved in distilled water, was -studied in adult male Sprague Dawley rats by administering oral doses of 20 and 40 mg/kg for 7 consecutive days. In half of the animals treated with 20 or 40 mg/kg of Brahmi, stress was given 2 hours after the last dose. Stress was also administered to the animals treated with distilled water alone.

Interestingly, stress when given to the animals pretreated with Brahmi for 7 days resulted in a decrease in Hsp70 expression in all the brain regions with a significant decrease occurring only in the hippocampus.

Likewise the activity of super oxide dismutase (SOD) was found to be further reduced in all the brain regions in the animals treated with the lower dose of Brahmi followed by stress. However, when stress was given to the animals pretreated with the higher dose of Brahmi, a significant increase in the enzyme activity was observed in the cerebral cortex and in the rest of the brain while the activity of super oxide

[I] **www.ncbi.nlm.nih.gov**

dismutase (SOD) was reduced to a much greater extent in the cerebellum and in the hippocampus.

The data indicate that Brahmi has potential to modulate the activities of Hsp70, P450 and super oxide dismutase (SOD) thereby possibly allowing the brain to be prepared to act under adverse conditions such as stress. [l]

2.3 STUDIES ON HYPNOSIS

Since ancient times large number of studies have been conducted to show the effects of hypnosis on anxiety. In the present study, the impact of two different interventional methods has been studied. In this context various relational studies are discussed below.

2.3.1 Anxiety Symptoms and Hypnosis

According to Mitra et al (2002), anxiety is a specific unpleasant state of tension, which brings danger signal to individual. The aspects of anxiety are many, ranging from the introspective to the objective physiological. The patients who suffer from anxiety in variety of life situations conceive relative bodily or mental experiences as catastrophic. Evaluation of the extent of anxiety aspects becomes mandatory for proper diagnosis and various self-rating scales are being used for that purpose. Watson and Clark (1984).

The common and normal responses to anxiety include blushing, stammering, raid breathing, palpitations, ‘butterflies’ in the stomach, excessive bowel activity, frequency of micturition and the overall feeling of being paralysed with fear. Although these are primitive protective responses, when they become chronic the continuous mental and physical symptoms can make life intolerable. Waxman (1981).

Furthermore he adds, relaxation in hypnosis can offer relief from anxiety symptoms, and the regular use of self-hypnosis will bring down the level of anxiety so that stressful situations can be confronted without any adverse effect. Such treatment may not be sufficient, since other neurotic behavior is common in highly anxious people and this must be dealt carefully.

As per Heap and Dryden (1991), anxiety is essentially a learned and anticipatory response, in contrast to fear, which is to some degree innate and can be elicited by certain definable stimuli.

Anxiety can be usefully conceptualized as having three main components:

1) Subjective-cognitive
2) Motor-behavioral
3) Physiological.

In most cases of gross clinical anxiety, all three components are present together, but in some clinical cases where anxiety is important only one or two of the components are involved in the presenting symptoms.

Lader and Marks (1971), have produced a very useful summary of the position, which is presented in following table.

Main possible patterns of anxiety responses

Component	1	2	3	4	5	6	7
Subjective-cognitive	+	+	+	-	-	-	+
Motor-behavioral	+	+	-	+	-	+	-
Physiological	+	-	-	+	+	-	+

+ indicates the component shows the response appropriate for anxiety.

- indicates the component does not show the response appropriate for anxiety.

Table courtesy from Lader and Marks (1971)

It is evident from this table that seven different combinations of the three components go to make up ‘anxiety’ in its many manifestations both clinically and in normal life. For instance, sufferers from most types of psychosomatic disorder have patterns similar to 1, 4, 5 and 7, and those with the pattern of 4 and 5 would probably deny that they are anxious. Pattern 6 is exemplified by a hysterical motor conversion disorder in which there is actual paralysis maintained by anxiety, but the patient presents with la belle indifference.

2.3.2 Effects of Hypnosis on Stress Response

There are a number of studies available on effect of hypnosis on stress or anxiety.

(A) Hypnosis and Neurotransmeters

Hypnosis affects on neurotransmeters like catecholamine and cortisol.
A study demonstrated that as subjects face a series of tasks that induced increasing anxiety, neurotransmeters level increased. Subjects were then taught relaxation strategies to master the anxiety associated with certain tasks.

As anxiety ratings fell, catecholamine levels fell to baseline. In the middle of some tasks, it was suggested to subjects that they had lost the ability to master the task, and anxiety and catecholamine levels were found to be even greater than had been seen previously. Bandura et al (1985).

The study suggests significant relationship between hypnosis and neurotransmeters regard to anxiety.

(B) Hypnosis and Physiological Responses

In a study that dramatically demonstrated the inherent variability associated with hypnotic interventions, Sturgis et al (1990), showed that heart rate, blood pressure, galvanic skin response, and electromyogram responses varied dramatically depending upon the task required by the hypnotic suggestion; for example, heart rate increased with suggestion of arm rigidity/levitation, whereas heart rate decreased with suggestion of deep relaxation.

(C) Hypnosis and Relaxation

The anxiety level of patients can be reduced by regular sessions of hypnotherapy involving the technique utilized in reactive anxiety and additionally the more traditional method of dynamic exploration may be introduced. It is best to leave most of the talking to the patient. In this way patient will more likely to recall events from the past, which he considers to be to blame for his symptoms.

Furthermore, he adds, hypnosis may be used to induce feelings of calmness and composure and by regular application, including the use of self-hypnosis if the patient co-operates, to reduce the level of anxiety. If anxiety has been diagnosed as the cause of the sleeplessness than hypnotherapy may be commenced without delay.

So far as the reduction of anxiety and fear, and the attaining of relaxation are concerned, at least nine out of ten patients can be assisted by the use of hypnosis. Waxman (1989).

As per Sadock and Sadock (2003), patients can easily achieve relaxation with hypnosis, so they can deal with phobias by controlling

their anxiety. Hypnosis can also induces relaxation in systemic desensitization.

2.3.3 Role of Hypnosis as a Potent Anti-Anxiety Agent

Hypnosis is psychotherapy. As per Ahuja (2002), psychotherapy can be defined as the treatment by psychological means, of problems of an emotional nature, in which a therapist deliberately establishes a professional relation with the patient to,

1. Remove, modify or retard existing symptoms
2. Mediate disturbed patterns of behavior, and/or
3. Promote positive personality growth and development.
4. Psychotherapy can be conducted by either verbal or non-verbal means.

Hypnosis has been an interesting phenomenon as far as psychological treatment method is concerned. All hypnosis is ultimately self-hypnosis. This process requires active participation and willingness of the subject (patient) to experience hypnotic trance.

Hypnosis is a useful way to help patient strategically refocus their presenting problems, their approaches to present – day living and their stated goals. Kaplan and Sadock (1995).

According to, Sharma and Kaur (2006), nurses have used complementary therapies for many years to relieve anxiety, promote comfort, and reduce or alleviate pain.

Physical therapies are most commonly used in our scenario but behavioral approach had been less customary, since familiarity of health personnel is very less (36%) with these techniques. Zaza et al (1999).

Hypnosis is empirically proved useful therapy for pain management also. It is obvious that anxiety is most of the time associated with pain. Therefore, pain management can automatically utilize for anxiety also. [(m)]

As per Sunnen (2001), hypnosis finds its most common clinical utilization in the treatment of anxiety and its related states, not only because of anxiety's prevalence, but because hypnosis has such a clear role as a potent anti-anxiety agent.

Furthermore, he adds, anxiety and anxiety-related conditions are the most common psychological afflictions of man and account for a major percentage of initial complaints to psychiatrists as well as to general practitioners. Although it is estimated that some 5% of the population may suffer from acute or chronic anxiety, with women outnumbering men two to one Cohen and White (1950), the numbers are probably significantly higher.

As a symptom, anxiety is a final common pathway for many conditions, physical as well as psychological. As syndromes, anxiety disorders are under intensive study to define more precisely their etiologies and clinical outcomes. Recent studies, showing disturbances of lactate metabolism in certain anxious individuals, point to the possibility that some anxiety states, like some depressive states, have strong biological and genetic determinants.

When medical conditions and major psychiatric syndromes are eliminated as reasons for anxiety, we are left with more functional causes. It is useful, in our therapeutic approach, to see patients' experiences of anxiety as falling into three general categories:

[(m)] **www.tnaionline.org**

(1) Individuals reporting chronic, free-floating feelings of fear (generalized anxiety disorder)

(2) Individuals manifesting discreet episodes of panic, but who, in between attacks, are relatively anxiety free (panic disorders)

(3) Mixed syndromes.

Generalized anxiety disorder is characterized by pervasive, persistent anxiety, manifested by motor tension-strained faces, fidgeting, restlessness, fatigue ability; autonomic hyperactivity-sweating, palpitations, light-headedness, paresthesias, upset stomach, lump in the throat, high resting pulse and respiratory rate; apprehensive expectation worry, rumination, anticipation of misfortune to self or others; hyper attentiveness resulting in distractibility, difficulty in concentrating, insomnia, irritability, and impatience. To meet diagnostic criteria, the anxious mood has to have lasted at least a month. [(n)]

2.3.4 Pre-Operative Anxiety Reduction and Hypnosis

On the grounds of Psychoneuroimmunology (PNI) pre-surgery stress or anxiety can be dealt. Some of the studies are mentioned here.

New research from the American Society of Anesthesiologists (2005), indicates that hypnosis could help soothe anxiety before surgery. They found that after one hypnosis session, patients were less anxious about their operation than they had been just half an hour before.

According to the researchers, pre-surgery anxiety has been linked to greater pain, increased need for painkillers, and longer hospital stays after surgery. "We all know that anxiety increases the chances of postoperative pain, postoperative analgesic consumption, and also hospital stay and recovery," says Saadat (2005). She adds “Right after hypnosis, anxiety levels were 68% lower than in the waiting room. In the operating room, the hypnosis group's anxiety levels were

[(n)] **www.triroc.com**

still less than half of what they had originally been. We were hoping that by using behavioral modification like hypnosis programs, preoperatively, we can get rid of the [postoperative] complications."

> According to Saadat et al (2005), “increased preoperative anxiety is reported to correlate with outcomes such as increased postoperative pain, increased postoperative analgesic requirements and prolonged recovery and hospital stay. Currently, various pharmacological and behavioral methods are available to treat this phenomenon. Unfortunately, these interventions are associated with increased operational costs and an increased likelihood of side effects. We therefore, performed a RCT to determine whether a pre-operative hypnosis session could alleviate pre-operative anxiety.”

Following IRB approval, patients aged 18-65 years old (ASA I-III) who were scheduled to undergo ambulatory surgery were recruited to this study. Patients were randomized to receive *either* hypnosis or attention control. In the preoperative holding area, patients in the hypnosis condition underwent a 45-minute hypnotic session with suggestion of relaxation and well being by an anesthesiologist trained in hypnosis (HS).

The attention group received 45 minutes of empathic attention that consisted of attentive listening and support without any specific suggestions. Neither sedative premeditation nor any other preoperative anxiolytic intervention was part of this study.

Following recruitment and randomization, baseline demographics and anxiety measures (VAS) were obtained. Next, the intervention was performed; anxiety of the patient was again evaluated at the end of the session and upon entry to the OR. An independent blinded observer also rated anxiety in each patient before and after intervention and upon entering into the OR (VAS).

To date, 30 eligible patients were recruited for either the hypnosis group (n=18) or the attention control group (n=12). Demographic characteristics did not differ significantly between the two groups. At baseline, the anxiety level of the hypnosis group did not differ from that of the attention control group.

In contrast, following the intervention, patients in the hypnosis group reported significantly less anxiety as compared to the attention control group. These findings were confirmed by the independent observer.

Hypnosis is an effective modality for the treatment of preoperative anxiety. Future studies are indicated to confirm. [o]

A study to reduce pre-operative anxiety and intra-operative anaesthetic requirements was carried out by Goldmann et al (1988).

Fifty-two female patients who underwent gynecological operations as day cases received either a short pre-operative hypnotic induction or a brief discussion of equal duration.

Hypnotized patients who underwent vaginal termination of pregnancy required significantly less methohexitone for induction of anaesthesia. They were also significantly more relaxed as judged by their visual analogue scores for anxiety. Less than half of the patients were satisfied with their knowledge about the operative procedure even after discussions with the surgeon and anaesthetist.

A significant correlation was found between anxiety and perceived knowledge of procedures. The results suggest that pre-operative hypnosis can provide a quick and effective way to reduce pre-operative patient anxiety and anaesthetic requirements for gynecological daycase surgery. [p]

[o] **www.asaabstracts.com**
[p] **www.hypnosiseire.com**

(A) Anxiety and Hypnosis During Surgery

Following study has been carried out by Katcher et al (1984), for comparison of contemplation and hypnosis for the reduction of anxiety and discomfort during dental surgery. In this study, complex moving visual stimuli were used to induce states of relaxation, hypnosis, and revery in 42 dental patients (aged 21-60 yrs). To test the efficacy of using aquarium contemplation to induce relaxation, subjects were randomly assigned to 1 of 5 treatments prior to elective oral surgery: contemplation of an aquarium, contemplation of a poster, poster contemplation with hypnotic induction, aquarium contemplation with hypnosis and a nonintervention control.

Subjects were administered 5 tests of susceptibility adapted from the Stanford Hypnotic Susceptibility Scale; blood pressure, heart rate, and subjective and objective measures of anxiety were also taken. It was found that pretreatment with aquarium contemplation and hypnosis, either alone or in combination, produced significantly greater degrees of relaxation during surgery than poster contemplation or the control procedure.

Two-way ANOVA demonstrated that a formal hypnotic induction did not augment the relaxation produced by aquarium contemplation. Findings suggest that aquarium contemplation can alter patients' subjective experiences and overt behavior during oral surgery.

In a report by Spiegel (1998), in the Harvard Mental Health Letter, the research was cited that Hypnosis methods have been used successfully for anxiety associated with medical procedures.

241 patients who were undergoing percutaneous vascular and renal procedures were randomly tested on three testing regimens, one of which was hypnosis. Patients rated their pain and anxiety on 1-10 scales

before, every 15 minutes during, and after the procedures. Pain remained flat over the duration of procedure time in the hypnosis group; pain increased linearly with procedure time in both other groups.

Anxiety decreased over time in all three groups; the sharpest decrease was in the group that was hypnotized. Procedure times were significantly shorter in the hypnosis group. In addition, hypnosis showed itself to be superior in improving hemodynamic stability. [q]

2.3.5 Comparison of Non-pharmacological Techniques to Reduce Anxiety

Here, a comparative study comprises of two different interventional strategies which do not have any pharmacological agent is discussed.

Benson et al (1978), have investigated prospectively the efficacy of two non-pharmacological relaxation techniques in the therapy of anxiety. A simple, meditational relaxation technique (MT) that elicits the changes of decreased sympathetic nervous system activity was compared to a self-hypnosis technique (HT) in which relaxation, with or without altered perceptions, was suggested.

32 patients with anxiety neurosis were divided into 2 groups on the basis of their responsively to hypnosis: moderate-high and low response. The MT or HT was then randomly assigned separately to each member of the two response groups. Thus, 4 treatment groups were studied: moderate-high response MT; low response MT; moderate-high responsively HT; and low response HT.

The low response HT group, by definition largely incapable of achieving the altered perceptions essential to hypnosis, was designed as the

[q] **www.changingstates.co.uk**

control group. Patients were instructed to practice the assigned technique daily for 8 weeks.

Change in anxiety was determined by three types of evaluation:

(1) Psychiatric assessment

(2) Physiological testing

(3) Self-assessment

There was essentially no difference between the two techniques in therapeutic efficacy according to these evaluations. Psychiatric assessment revealed overall improvement in 34% of the patients and the self-rating assessment indicated improvement in 63% of the population. Patients who had moderate-high hypnotic response, independent of the technique used, significantly improved on psychiatric assessment ($p = 0.05$) and decreased average systolic blood pressure from 126.1 to 122.5 mm Hg over the 8-week period ($p = 0.048$).

The responsively scores at the higher end of the hypnotic response spectrum were proportionately correlated to greater decreases in systolic blood pressure ($p = 0.075$) and to improvement by psychiatric assessment ($p = 0.003$). There was, however, no consistent relation between hypnotic response and the other assessments made, such as diastolic blood pressure, oxygen consumption, heart rate and the self-rating questionnaires.

The meditation and self-hypnosis techniques employed in this investigation are simple to use and effective in the therapy of anxiety.

Another study involving non-pharmacological interventional methods is mentioned below where hypnosis is one of the methods. In this study, Hurley (1980) administered the IPAT anxiety scale as one of the measurement tools of anxiety.

60 college students were pretested on three scales: The IPAT Anxiety Scale, the Barron Ego-strength scale, and the Rotter I-E scale. The Ss then were assigned randomly to one of four treatment groups designated: Hypnotic treatment, biofeedback treatment, trophotropic treatment, and control. Three of these groups met separately for 60 minutes once a week for 8 weeks. The control group did not meet during this time. During the sessions, each group was trained in a different technique for self-regulation.

At the end of the 8-week period the scales were re-administered to all groups. A series of covariance analyses indicated that hypnosis was a more effective self-regulatory technique for lowering anxiety levels when compared to biofeedback or trophotropic response procedures.

With regard to increasing ego strength, both the hypnotic training group and the biofeedback-training group proved to be significant. No significant difference was found between the experimental and control groups on the I-E scores.

In the present research also an Indian adaptation of the IPAT anxiety scale is used to measure anxiety scores of the sample, before and after hypnotic treatment.

In a study Melnick and Russell (1976), assessed the comparative effectiveness of systematic desensitization (SD) and the directed experience hypnotic technique (HT) in reducing self-reported test anxiety and increasing the academic performance of 36 test-anxious undergraduates. Subjects were assigned randomly to either the HT or SD conditions or to 1 of 2 control groups.

All subjects had previously scored above the 50th percentile on Sarason's Test Anxiety Questionnaire (TAQ) and below the 85th percentile on a midterm exam. Results indicate that only the SD treatment significantly reduced TAQ scores. No significant improvement

in academic performance was observed for either treatment. An additional analysis of high- vs moderate-anxious subgroups failed to show differential treatment effects on either dependent measure.

A study carried out by Kelly et al (1991), shows hypnosis as a useful supportive treatment along with other non-pharmacological interventions for stress management.

Four stress management techniques were evaluated for their general appeal, their immediate benefits, and the subjective experiences they evoke. One hundred undergraduates were randomly assigned to one of five treatment groups:

(1) Progressive muscle relaxation (PMR)

(2) Distraction imagery

(3) Focused imagery

(4) Listening to music

(5) Sitting quietly (control)

Distraction imagery and listening to music were the only techniques found to reduce anxiety to a greater extent than simply sitting quietly. The techniques differed in the way they made subjects feel, but not in their general appeal. Individuals with a 'blunting' coping style were more likely to find all five techniques appealing.

Tests used included the Miller Behavioral Style Scale, Cognitive-Somatic Anxiety Questionnaire of Schwartz, Davidson & Golman, Life Orientation Test of Scheier & Carver, Somatic Perception Questionnaire of Landy and Stern, Body Consciousness Questionnaire of L. C. Miller, Murphy, & Buss, Betts' Questionnaire Upon Mental Imagery, Shortened Form, State-Trait Anxiety

Inventory, and Technique Evaluation Questionnaire of the authors. Progressive muscle relaxation was according to Bernstein & Borkovec.

This data can be used in support of imagery-suggestion types of hypnosis reducing anxiety. It shows particularly strong effects for people high in cognitive anxiety or low in optimism, pre-treatment.

2.3.6 The Cognitive-Behavioral Approach with Hypnosis Regard to Anxiety

The following study was carried out to examine effects of Rational Stage Directed Hypnotherapy (RSDH) on test anxiety.

Boutin and Tosi (1983), examined the effects of four treatment conditions on the modification of Irrational Ideas and test anxiety in female nursing students. The treatments were RSDH - a cognitive behavioral approach that utilized hypnosis and vivid-emotive-imagery, a hypnosis-only treatment, a placebo condition, and a no-treatment control. The 48 Ss were assigned randomly to one of these treatment groups, which met for 1 hour per week for 6 consecutive weeks with in-vivo homework assignments also utilized.

Statistically significant treatment effects on cognitive, affective, behavioral, and physiological measures were noted for both the RSDH and hypnosis group at the post-test and at a 2-month follow-up. Post-hoc analyses revealed the RSDH treatment group to be significantly more effective than the hypnosis only group on both the post- and follow-up tests. The placebo and control groups showed no significant effects either at post-treatment or at follow-up.

In another study, Mauer (1991) compared cognitive behavioral and hypnotic techniques in the management of electromyography pain.

"Compared a cognitive behavioral technique that included providing specific sensory and procedural information combined with relaxation with a hypnotic technique (relaxation with guided imagery) and a control group for management of acute EMG pain and anxiety. Pain and anxiety ratings were gathered from 45 EMG patients and observers for both nerve conduction and needle electrode components of the EMG exam.

It was found that only the hypnosis group significantly reduced pain and anxiety during the needle electrode portion of the procedure. Patients with unexplained or functional symptoms reported more EMG pain and anxiety than patients who had an organically based disease. Because having had a prior EMG seemed to have an effect on the efficacy of treatment, the data were reexamined.

Results determined that inexperienced EMG patients who were treated had less pain and anxiety than patients who experienced EMG before, but inexperienced control patients had an increase in pain and anxiety over experienced patients". (p)

2.4 REVIEW OF LITERATURE AND PRESENT STUDY

After reviewing above-mentioned relevant literature on Brahmi, it becomes very obvious that Brahmi can be utilized to enhance certain psychological functions. As its indications suggest Brahmi is useful for anxiety, depression, memory enhancement and mental alertness. Studies done by Singh and Singh (1980), Stough (2001) and Central Drug Institute of India (2004) recommend the use of Brahmi for potential reduction in anxiety. These are key investigations relevant to the study.

Present investigator has reviewed literature from the field of clinical psychology, psychiatry, anesthesiology, surgery and general medicine. There are number of researches available on hypnosis regard to anxiety reduction. These

researches broadly suggest that hypnotic induction can be an effective tool for different aspects of anxiety. These aspects are discussed in detail in chapter no-3.

However, to the knowledge of researcher, the anti anxiety property of Brahmi has not been utilized alongwith hypnosis in any investigation.

In the present study, the investigator aims to compare the impact of Brahmi- an Ayurvedic medicine and hypnosis- a psychotherapy on anxiety and its aspects. The investigator has tried to review the literature pertaining to the title of the study, but to his knowledge no comparative study has been found in this specific reference.

The present researcher has tried to be more careful and cautious to improve his study by taking all possible precautions at the stage of collecting and analyzing data by using adequate and relevant study design and reputed statistical techniques. The next chapters discuss such procedure and results.

CHAPTER-III

PROBLEM AND METHODOLOGY

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3.1 INTRODUCTION

In the present study, investigator has attempted a comparative study through which one can have an idea about different coping strategies or techniques to deal with stress and anxiety.

According to review of relevant literature one can find that many attempts have been made to deal with the same problem in different parts of the world. Here, ancient wisdom's therapeutic intervention i.e. Brahmi and modern psychological treatment method i.e. Hypnosis have been compared to see that how far they are capable enough to reduce anxiety.

3.2 PROBLEM: THE AIM OF THE STUDY

Proper health care is one of the prime issues, today in India. People seek various help in regard to physical and mental health. Now a days, many people would like to go for alternative treatment over the globe.

Ayurveda is the ancient Indian healing system and life science, says Anne Green (2002). This life science and a conventional treatment method is gaining attention of researchers throughout of the world. Present study is also one of them.

Singh et al (1977), tested anti-anxiety effect of four Indian indigenous drugs such as *Shankhpushpi* (Convolvulus pluricaulis), *Brahmi* (Bacopa monnieri), *Mandukparni* (Hydrocotyle asiatica) and *Ashwagandha* (Withania somnifera). The findings of the study revealed that these drugs reduced the level of anxiety, neuroticism and mental fatigue. Moreover there drugs improved memory and performance pattern in the patients suffering from anxiety neurosis. This group of drugs is known as 'Medhya Rasayana' drugs.

According to Pestonjee (1992), above said authors noted that some of these drugs influenced the neurochemistry of the brain in rats in terms of changes in the whole brain tissue level of acetylcholine, catecholamines, histamine and serotonin.

Here, in the present study one of the Medhya Rasayanas which is widely used named Brahmi (Bacopa Monnieri) is considered and administered as one of the treatment methods for reduction of anxiety.

The second treatment method is a psychotherapy i.e. Hypnosis. Sheehan (1997), points out that many doctors recommend the use of psychotherapeutic techniques, including hypnosis, in the management of anxiety. Hypnosis is one of the widely used psychotherapy, today.

Effective control and management of anxiety is quite an important issue as well as management of physical problems. The present research tries to understand the comparative efficacy of both the intervention methods.

In the present study, an attempt has been made to find out better effectiveness of alternative therapies as far as anxiety is concerned.

India, by virtue of the fact, is a transitional society. One can see the traditional and modern systems together. The same is the case with anxiety and its management. If used with proper indication, these both methods Brahmi and Hypnosis have almost less adverse effects.

As per present study, both treatments have certain therapeutic effects on anxiety. It has been studied in the format of before-after study. Before the administration of Brahmi, to measure pre treatment level of anxiety was measured by an anxiety scale i.e. IPAT anxiety scale. After three months duration, measurement was repeated on the same subjects. The same pattern was maintained for hypnosis-administered group. The control group was not

given any of the treatments but measured anxiety level on the same scale. Then observed effects were statistically analyzed.

So, the problem is worded here as ‘A Study of Impact of Brahmi-An Ayurvedic Medicine and Hypnosis on Anxiety.’

3.3 OBJECTIVES

Following are the specific objectives of the present study.

1) To study the impact of Brahmi on anxiety.
2) To study the impact of Hypnosis on anxiety.
3) To compare the impact of both treatment methods.
4) To know weather age, gender and marital status play any role in regard to different methods of treatment.

In the present study, both the treatment methods are used independently. Their impacts on anxiety were measured. Both the interventional methods were compared also to find out its efficacy.

3.4 SIGNIFICANCE OF THE STUDY

Present study has got significance in variety of areas. Other than benefits to the anxiety suffering patients or people, it has got it’s importance as mentioned below.

1) This study will be useful for clinical psychologists and other mental health care professionals.
2) The study can throw light on anxiety management for ayurvedic physicians as well.
3) This study may point out the degree of anxiety in various age groups.

4) The results of the study may expand the outlook regarding alternative therapies.

3.5 HYPOTHESES

In the present research anxiety is dependent variable and Brahmi, Hypnosis and some demographic variables like age, gender and marital status are independent variables. Anxiety as measured by IPAT anxiety scale, yielded 5 sub scales majoring five factors of anxiety, namely Q_3 (Self-controlled), C (emotional unstable / emotional stable), L (suspicious / trusting), O (apprehensive / self-assured) & Q_4 (tensed / relaxed). Various hypotheses regarding the relationship between various independent variables and 5 factors of anxiety can be stated as under.

In the present study, for scientific and methodological investigation of the role of abovementioned objectives, the following null hypotheses were tested.

Hypotheses about Q_3 (Uncontrolled / Self-controlled) Aspect of Anxiety:

1) There will be no significant differences among the posttest mean scores on Q_3 of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on Q_3 as a covariate.

2) There will be no significant interactive effect of age and treatment on the posttest scores of Q_3 taking the pretest scores on Q_3 as a covariate.

3) There will be no significant interactive effect of gender and treatment on the posttest scores of Q_3 taking the pretest scores on Q_3 as a covariate.

4) There will be no significant interactive effect of marital status and treatment on the posttest scores of Q_3 taking the pretest scores on Q_3 as a covariate.

Hypotheses about C (emotional unstable / emotional stable) Aspect of Anxiety:

5) There will be no significant differences among the posttest mean scores on C of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on C as a covariate.

6) There will be no significant interactive effect of age and treatment on the posttest scores of C taking the pretest scores on C as a covariate.

7) There will be no significant interactive effect of gender and treatment on the posttest scores of C taking the pretest scores on C as a covariate.

8) There will be no significant interactive effect of marital status and treatment on the posttest scores of C taking the pretest scores on C as a covariate.

Hypotheses about L (suspicious / trusting) Aspect of Anxiety:

9) There will be no significant differences among the posttest mean scores on L of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on L as a covariate.

10) There will be no significant interactive effect of age and treatment on the posttest scores of L taking the pretest scores on L as a covariate.

11) There will be no significant interactive effect of gender and treatment on the posttest scores of L taking the pretest scores on L as a covariate.

12) There will be no significant interactive effect of marital status and treatment on the posttest scores of L taking the pretest scores on L as a covariate.

Hypotheses about O (apprehensive / self-assured)
Aspect of Anxiety:

13) There will be no significant differences among the posttest mean scores on O of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on O as a covariate.

14) There will be no significant interactive effect of age and treatment on the posttest scores of O taking the pretest scores on O as a covariate.

15) There will be no significant interactive effect of gender and treatment on the posttest scores of O taking the pretest scores on O as a covariate.

16) There will be no significant interactive effect of marital status and treatment on the posttest scores of O taking the pretest scores on O as a covariate.

Hypotheses about Q_4 (tensed / relaxed)
Aspect of Anxiety:

17) There will be no significant differences among the posttest mean scores on Q_4 of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on Q_4 as a covariate.

18) There will be no significant interactive effect of age and treatment on the posttest scores of Q_4 taking the pretest scores on Q_4 as a covariate.

19) There will be no significant interactive effect of gender and treatment on the posttest scores of Q_4 taking the pretest scores on Q_4 as a covariate.

20) There will be no significant interactive effect of marital status and treatment on the posttest scores of Q_4 taking the pretest scores on Q_4 as a covariate.

Introduction of A and B Scores

The ASQ gave anxiety scores into two major sections,

(A) Covert: The scores of the first half of the scale indicate covert anxiety of the subject.

(B) Overt: The second half of the scale indicates overt anxiety of the subject.

Finally A+B scores give total anxiety score. This being so, here hypotheses for A (covert) for B (overt) and for total anxiety score are constructed separately as under.

Hypotheses about 'A': no 21 to 24

Hypotheses about 'B': no 25 to 28

Hypotheses about total score no: 29 to 32

Hypotheses about A (covert)
Aspect of Anxiety:

21) There will be no significant differences among the posttest mean scores on A (covert) score of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on A score as a covariate.

22) There will be no significant interactive effect of age and treatment on the posttest scores of A (covert) score taking the pretest scores on A score as a covariate.

23) There will be no significant interactive effect of gender and treatment on the posttest scores of A (covert) score taking the pretest scores on A score as a covariate.

24) There will be no significant interactive effect of marital status and treatment on the posttest scores of A (covert) score taking the pretest scores on A score as a covariate.

Hypotheses about B (overt)
Aspect of Anxiety:

25) There will be no significant differences among the posttest mean scores on B (overt) score of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on B score as a covariate.

26) There will be no significant interactive effect of age and treatment on the posttest scores of B (overt) score taking the pretest scores on B score as a covariate.

27) There will be no significant interactive effect of gender and treatment on the posttest scores of B (overt) score taking the pretest scores on B score as a covariate.

28) There will be no significant interactive effect of marital status and treatment on the posttest scores of B (overt) score taking the pretest scores on B score as a covariate.

Total score of Anxiety:

29) There will be no significant differences among the posttest mean scores on total score of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on total score as a covariate.

30) There will be no significant interactive effect of age and treatment on the posttest scores of total score taking the pretest scores on total score as a covariate.

31) There will be no significant interactive effect of gender and treatment on the posttest scores of total score taking the pretest scores on total score as a covariate.

32) There will be no significant interactive effect of marital status and treatment on the posttest scores of total score taking the pretest scores on total score as a covariate.

3.6 VARIABLES

3.6.1 Independent variables

There are two types of independent variables D'Amato (1970).

(1) E-Type
(2) S-Type

E-Type:

E-Type- independent variables are those, which are directly manipulated by the experimenter.

There was one E-Type independent variable. It was the treatment, which had three levels.

(1) Brahmi
(2) Hypnosis
(3) No treatment

S-Type:

Additionally certain S-type independent variables were also studied. S-type independent variables are those independent variables, which are not directly manipulated by the experimenter but are selected to study their effects on dependent variable.

In the present study, these three demographic variables namely age, gender and marital status were S-Type of independent variables.

Here, independent variable means those variables, which were manipulated or varied at different levels in order to study their effects.

1. Treatment
   3 levels-
   - I. Brahmi
   - II. Hypnosis
   - III No treatment
2. Age
   3 levels-
   - I. 16-30 years
   - II. 31-45 years
   - III. 36-60 years

3. Gender

   2 levels-

   I. Male

   II. Female

4. Marital Status

   2 levels-

   I. Married

   II. Unmarried

3.6.2 Dependent variable

The total scores on the scale and the subscales of ASQ (IPAT Questionnaire) form the dependent variable.

There were seven subscales-

(1) Q_3 (Uncontrolled / Self-controlled)

(2) C (Emotional unstable / emotional stable)

(3) L (Suspicious / trusting)

(4) O (Apprehensive / self-assured)

(5) Q_4 (Tensed / relaxed)

(6) A (Covert) score

(7) B (Overt) score

3.6.3 Controlled or Constant Variables

1) Number of participants in each treatment group was equal.

2) There was equal time interval for all the three levels of treatment.

3.7 EXPERIMENTAL DESIGN

In the present study, pre test-post test control group design is used. The subjects voluntarily selected the type of treatment (i.e. Brahmi/Hypnosis), so quasy experimental design was used.

There were three levels of treatment and there were three groups in this experimental design namely-

1) Brahmi Administered Group (B.A.G.)
2) Hypnosis Administered Group (H.A.G.)
3) No Treatment or Control Group (C.G.)

Since aim of this research was as mentioned in the section 3.2 the suitable statistics was used.

3.8 SAMPLE

The basic sample was purposive i.e. the patient were included in this experiment but the distribution of the patients among the three groups was randomized.

A purposive sample of 180 patients was selected for the study. Patients were administered both the treatments at O.P.D. level. Number of male and female patients was maintained equally as per the design of the research.

Table 3.1

Sample Distribution

TREATMENTS	MALE	FEMALE	TOTAL
BRAHMI	30	30	60
HYPNOSIS	30	30	60
CONTROL GROUP	30	30	60
TOTAL	90	90	180

3.9 TOOLS USED

Following tools were used in the present study.

3.9.1 Indian adaptation of IPAT anxiety scale (A.S.Q.) by Kapoor (1976)

The original anxiety scale was developed by Kurg, Scheier and Cattell (1976), known as IPAT ASQ or Cattell's Self Analysis Form.

The Indian adaptation Hindi version developed by Kapoor (1976) was used in the present study. It is constituted on the basis of 5 principles 16 P.F. factors. It is meant for 16 years and above adults.

Design and Format of the Test

According to the handbook for the IPAT anxiety scale, the test was first published in 1957 and included the best 40 anxiety items among several thousand-personality items, Cattell (1973). The number of items per anxiety component was approximately proportional to that component's importance in the anxiety pattern. A further division of items was made into two aspects.

(A) Those, which appeared more cryptic or less obvious- i.e. covert.
(B) Those, which manifestly refer to anxiety and to anxiety symptoms- i.e. overt.

Separate scores measuring covert (cryptic) and overt (manifest) anxiety may be derived from the test.

In 1976, items in the test were carefully updated to adjust for language changes, which had taken, place in the interval since initial publication. As a

final check, experimental comparisons of old and new formats were carried out to insure that the changes had no impact on the existing norms. Each question has three possible answers. The example of the following two items is printed on the front cover of the test booklet.

1. I enjoy walking.
   [a] yes, [b] sometimes, [c] no.

2. I would rather spend an evening:
   [a] talking to people, [b] uncertain, [c] at a movie.

All answers are to be marked under the respective items directly on the two inside pages of the four-page test booklet. The front cover is used for testee identification and for the instructions, the back cover for recording scores and clinical observations.

The ASQ was developed as a means of getting clinical anxiety information in a rapid objective and standard manner. It is brief and non-stressful, applicable to all but the lowest educational levels, and appropriate for chronological ages of 14 or 15 years on upward throughout adulthood. The scale gives an accurate appraisal of free anxiety level, supplementing clinical diagnosis and facilitating all kinds of research or screening operations where very little diagnostic or assessment time can be spent with each examinee.

Table 3.2

Average Anxiety Factor Pattern Values Across 14 Studies[a]

Trait	Primary Factor	Average Loading in the Anxiety Pattern[b]
Q_4	Tense / Relaxed [c]	80
O	Apprehensive/Self-assured	78
C	Emotionally unstable / Emotionally stable	66
L	Suspicious / Trusting	54
Q_3	Uncontrolled / Self-controlled	43
H	Venturesome / Shy	-38
Q_1	Experimenting / Conservative	-06
F	Happy-go-lucky / Sober	-03
G	Conscientious / Expedient	-03
M	Imaginative / Practical	-03
B	More intelligent / Less intelligent	-02
N	Shrewd / Naïve	-02
A	Warmhearted / Reserved	-01
Q_2	Group-adherent/Self-sufficient	-01
E	Assertive / Nonassertive	00
I	Sensitive / Tough-minded	00

[a]Based on more than 10,000 subjects. Cattell (1973)

[b]Factor loadings (or factor pattern coefficients as they are more technically called) show how much influence the factor has upon the primary variable. Values generally range between –1.00 and + 1.00. Loadings around zero are interpreted to mean that the factor and variable are essentially unrelated.

[c]Source traits are bipolar. The first adjective here describes high scores, the second describes low scores.

The test can be easily administered individually or to large groups at one time. It can even be self-administering. For example, patient can check off answers to the 40 test questions in about 5 to 10 minutes while waiting for an interview. The privacy and impersonality of this situation result in less embarrassment and often, a greater willingness to be frank and objective than in a face-to-face situation. There is also less likelihood of distortion and of influence by suggestion.

Finally, the ASQ can be easily scored, in about a minute, using a standard key that fits over the test booklet. Scoring can be done by an assistant (quickly enough to have it ready for an examinee's consultation with the clinician) without any drain on the skilled practitioner's time. The filled-out test booklet itself constitutes a useful record of total anxiety level and even the specific qualitative form of the symptoms as indicated by the answers to individual questions. The scale can be used not only for initial diagnosis but also in follow-ups as a 'clinical thermometer' for charting progress or change of level with psychotherapy, medication, change of situation, etc., in research or practice.

As per research findings, the ASQ is indeed sensitive to change over time and conditions. However, it was not specifically designed as a state measure. When very high sensitivity to change is needed, one of the other IPAT anxiety measures may be more appropriate.

Administration of the Test

Administration and scoring of the ASQ are simple and straightforward. The test was designed to be verbally undemanding and as non-stressful as possible. In cases where reading skills are limited and pose a problem, words and phrases in the test may be explained to the examinee. In the case of a blind examinee the entire test may be administered orally.

Here, when required the difficult words or sentences were explained to gujarati speaking subjects. The test was administered in clinical setups. The subjects were briefed about the test and both interventional treatment methods. The test was administered at private clinics and hospitals.

Environmental conditions (lighting, temperature, etc.) were adjusted to provide a comfortable testing setting for that, subjects were seated in a separate cabin in the clinic.

In order to establish good rapport and maximize the validity of the responses, the examiner made introductory remarks appropriate to the situation. Contextual variables, which may need to be considered in interpreting the results were noted at time, were necessary.

After testing, the observations were recorded directly on the booklet or independently. Space has been provided for this purpose on page 4. of the test.

Thus, whether an examinee seems visibly agitated or uncomfortable at the time of testing may influence the interpretation of test score. An individual who took four times longer than average to answer the questions may be over precise and an examinee who finished the test in a minute was questioned.

In few instances the test was administered by an assistant, it was observed that the assistant was adequately trained to identify and report on these possible confounding influences so that results may be properly interpreted.

Test instructions are printed on the front page of the ASQ booklet along with two example items. Depending upon how test sophisticated the examinee is, it may be necessary in some cases to go carefully over these instructions. In other cases, it may suffice to emphasize only the main points.

The test was given either individually or to large groups. Refer to the test as the ‘self analysis form’ rather than as an anxiety test. Reinforce the printed instructions by urging the examinee to be as frank as possible.

In clinical settings the surety of the confidentiality of test scores was conveyed to the subjects.

For convenience, all answers were recorded directly on the test booklet. The test is un-timed but typically requires only about 5 minutes for the examinee of average reading ability that is not excessively disturbed. Anyone taking an unusually long time was reminded that the ‘first response’ to each question was needed.

In Gujarati speaking subjects, the relevant meanings were explained. Most of them could attempt in Hindi form of the test.

It was checked out that each examinee had answered all questions when tests were collected.

The test comprises of 40 questions. The first 20 questions indicate covert or indirect anxiety. The total score of these 20 items is named as score A. The rest 20 questions indicate overt, manifest or symptomatic anxiety. The total score of 21 to 40 items is named as score B.

Five different factors i.e. Q3, C, L, O and Q4 can be found distinctly as mentioned in Table 3.3

Table 3.3

Scoring description of anxiety factors of ASQ

Alphabetic Designation	Low-Anxious Scoring Description	High-Anxious Scoring Description	Identification of items by number on test form		Total number of items
			Covert	**Overt**	
O (Apprehension/ Self-assured)	Self Assured	Apprehensive	10, 11, 12, 13, 14, 15	30, 31, 32, 33, 34, 35	12
	Placid	Self Reproaching			
	Secure	Insecure			
	Complacent	Worrying			
	Self confident	Troubled			
	Untroubled				
Q4 (Tension / Relaxed)	Relaxed	Tense	16, 17, 18, 19, 20	36, 37, 38, 39, 40	10
	Tranquil	Frustrated			
	Un-frustrated	Driven			
		Overwrought			
Q3 (Low Self Esteem / Uncontrolled / Self-controlled)	Self controlled	Uncontrolled	1, 2, 3, 4	21, 22, 23, 24	8
	Socially precise	Follows on urges			
	Compulsive	Careless of social rules			

Table 3.3 continue on next page

C (Emotionally unstable / Emotionally stable)	Emotionally	Emotionally	5, 6, 7	25, 26, 27	6
	Stable	Unstable			
	Mature	Easily upset			
	Realistic	Changeable			
	Calm				
L (Suspicion / Trusting)	Trusting	Suspicious	8, 9	28, 29	4
	Tolerant	Jealous			
	Permissive	Hard to fool			
	Adaptable				

Scoring of the Test

The scoring key was laid directly over the booklet, following the simple instructions printed on the key itself. The scorer added the scores 2's or 1's for each answer, according to the numbers printed above the hole through which the answer appears. The higher score always means more anxiety. Three kinds of scores for the test was obtained:

1. A single total anxiety score based on all 40 items. This is all that is recommended or needed in the majority of cases.

2. A breakdown into (a) an unrealized, covert anxiety score, Score A, for the 20 items on the left-hand test page; and (b) an overt, symptomatic, conscious anxiety score, Score B, for the 20 right-hand-page items. Scores A and B sum to the total score in paragraph 1 above.

When used separately, these scores can be presented for interpretation as a ratio of overt to covert anxiety (Score B / Score A), though Bendig (1959a; 1959b) has suggested using, instead, a difference score B-A.

3. A breakdown of total anxiety into five personality components of anxiety. Preceding table no 3.2 identifies the items belonging to each of the five personality components.

Reliability and Validity

Reliability

Two types of reliability estimates are provided for the total ASQ score in following table, test-retest (consistency over time) and internal consistency (consistency across items). The first is normally of greater interest because in many applied settings psychological testing may take place several days or weeks before the scores are actually used. Cattell et al (1968).

Table no. 3.4 is mentioned as per manual of ASQ

Table 3.4

Reliability of the ASQ Total Scale Score

Value	Method	Sample Description
Test-Retest Reliability		
.93	Retest after One Week	87 adults, males and females. Levitt & Persky (1962) plus additional, previously unpublished data.
.87	Retest after Two Weeks	277 Japanese university students, males and females.
.86	Retest after Two Weeks	345 South African high school students, males and females. Cattell, Scheier & Madge (1968).

.82	Retest after Four Weeks	94 university students, males and females. Unpublished data provided by Professor John R. Neselroade, Pennsylvania State University.
Internal Consistency Reliability		
.92	Split-half, corrected to full test length	27 adults, males and females.
.91	Split-half, corrected	120 adults, males and females, normals and hospitalized neurotics.
.89	Split-half, corrected	400 Indian university students, males and females. Hunda, Sudahar & Sighu (1972).
.87	Split-half, corrected	340 Japanese university students, males and females.
.86	Split-half, corrected	200 Indian graduate students, males. Hundal, Singh & Singh (1970).
.85	Split-half, corrected	305 German university students and adult clinic cases, males and females. Beyme & Fahrenberg (1968).
.84	Split-half, corrected	240 adults, males and females.
.80	Kuder-Richardson Formula 20	1247 South African high school students, males and females. Cattell et al (1968).
.78	Split-half, corrected	789 South African high school students, males and females. Cattell et al (1968).

Averaging across the figures in above table and using the relationship between reliability and standard error of measurement, we arrive at the conclusion that the standard error of measurement for the ASQ is approximately 3 raw score points

or .5 stens. That is, about two-thirds of the time, the individual's 'true' anxiety score will fall within 3 raw score points or within one-half sten of the obtained score.

Validity

The validity of the ASQ is approached from three sources: (a) how well the test score correlates with the pure anxiety factor it was designed to measure; (b) how well the test score corresponds with clinical judgment regarding anxiety level; and (c) how well the test score relates to other questionnaire measures of anxiety. Different investigators have found co-relations of scale scores with the pure anxiety factor. These co-relations are mention in the following tables.

Table 3.5

ASQ Validity: Correlations of Scale Scores with the Pure Anxiety Factor

Size	**Sample Description**	**Correlation with Anxiety Factor**	**Source**
182	128 neurotic and 54 normal adults of both sexes, generally middle and lower class.	.94	Rickels and Cattell (1965).
163	Male college students from South Africa	.91	Tempier (1972).
53	Adult mals, aged 25 to 59 years, I industrial supervisory positions	.90	Kahn et al. (1964).
105	Male and female college students from South Africa	.88	Templer (1971).
223	Male and female college students.	.84	Barratt (1968).
726 (Total sample size).		**.90 (Average validity across studies)**	

Table 3.6

ASQ Validity: Correlations of Scale Scores with Clinical Ratings of Anxiety

Size	Sample Description	Correlation with Clinical Ratings	Source
14	Male and female thyrotoxic patients from England.	.95	Greer et al (1973).
17	Male and female anxiety state patients from England.	.73	Greer et al (1973).
86	Male college undergraduates	.40	Scheier & Cattell (1958).
39	Male and female anxiety neurotics.	.17	Robinson et al (1965).
156 (Total sample size).		**.49 (Average validity across four studies)**	

The validity of the ASQ has been approached in three independent ways. The evidence from a number of factor-analytic investigations from studies of clinically assessed anxiety and from other questionnaire measures of anxiety converges to the conclusion that the validity of the ASQ-the extent to which it measures the central core of the anxiety concept-approaches 0.90. Cattell et al (1968).

3.9.2 Personal Data Sheet (P.D.S.)

P.D.S. comprises of subjects information i.e. name, date, sex, age, marital status, race & religion, education, occupation, monthly income, type of family (joint/nuclear). It is presented in appendix.

3.10 PROCEDURE OF WORK (for collection and scoring of data)

The whole procedure of the study is discussed below.

In the present research, the pre-post experimental design was followed. Total 180 subjects were selected.

This clinical study was done on three different groups. 30 males and 30 females were given Brahmi treatment for the duration of 3 months. Same way, 30 males and 30 females were given Hypnosis treatment for the same duration.

For controlling 30 males and 30 females were selected to whom no treatment was given however they were with anxiety symptoms.

All subjects were given anxiety scale to measure anxiety level before and after treatment. The control group's anxiety level was also measured before and after the duration of 3 months. The effect of treatments was measured on the basis of scores on anxiety scale according to pre-post design.

3.10.1 Selection of Sample

The selection of sample was purposive. The sample comprises of the patients who came at O.P.D. level with more or less complaints pertaining to anxiety symptoms. They were selected from clinical setups, private as well as civil hospital. Majority of them were selected from private clinics. i.e. Sri Krishna Prasad Hospital and Bhimani Mental Health Centre, Ahmedabad.

3.10.2 Administration of Scale

For getting anxiety scores, investigator instructed subjects properly. They were administered ASQ before and after both treatments independently.

Each the 180 subjects under the study were administered Personal Data Sheet and the comprehensive questionnaire (IPAT anxiety scale) individually and separately at O.P.D. level, at above said places. To determine anxiety level DSM-4 criteria were followed.

All subjects were administered anxiety scales before and after treatments. The duration was maintained same as 12 weeks for the administration of both the treatments.

3.10.3 Administration of Brahmi

Being an ayurvedic physician, the investigator clinically decided the doses and administration of Brahmi.

Brahmi treatment was given twice a day for 12 weeks. The preparation was powder turned syrup based form.

The subjects were instructed to take three teaspoons twice a day, as per prescribed recommendation for anxiety.

The medicine named ‘Brahmi Syrup’ was purchased from single vendor only i.e. Ajit Medical Store, Ahmedabad, to sustain its quality.

3.10.4 Hypnosis Administration

Subjects were selected randomly for the application of hypnosis. The general tendency of trance level can be classified into three levels i.e.

1. Light
2. Medium
3. Deep

Here the subjects were identified the level of trance by ideo motor suggestions. They were asked to raise the arm and not allowed to put it down even if they try. Other checking for trance level was testing in ability to stop rolling hands.

Around 70 per cent subjects experienced light trance i.e. 42 subjects

20 per cent subjects experienced medium trance i.e. 12 subjects.

And 10 per cent subjects experienced deep trance i.e. 6 subjects.

Clinically light trance is considered enough for therapeutic use. So, all trance levels were considered for administration of hypnosis.

The therapy started with relaxation in quiet treatment room. After achieving relaxation, the subjects were given suggestions for anxiety reduction in their routine life. All the subjects were given a common suggestion format.

3 hypnotic sessions of 15 to 20 minutes each were given to relevant groups in every week for 12 weeks at Bhimani Mental Health Centre. The sessions were administered by prior appointments.

The control group comprises of 60 subjects, 30 males and 30 females. It is reported and tested on anxiety scale before and after duration of 12 weeks, but not treated lot.

These 60 subjects comprises of both genders equally have been considered for comparative study with effect of Brahmi and Hypnosis. Again same duration was maintained for control.

3.11 STATISTICAL ANALYSIS OF DATA

Necessary descriptive and inferential statistics were used to analyze the obtained data of 180 subjects.

3.11.1 Descriptive Statistics

In the descriptive statistics, the means and standard deviations were calculated for the total score on the IPAT anxiety scale and scores for the subscales of the tool.

3.11.2 Inferential Statistics

For testing the hypotheses of the present study, analysis of covariance (ANCOVA) was applied. In this application the calculation of F ratios for the main and interactive effects of the independent variable were carried out.

The pretest score was a covariate in the ANCOVA.

All these results have been summarized, tabulated and discussed in next chapters.

CHAPTER-IV

RESULTS AND DISCUSSION

4.1 Q3 ASPECT OF ANXIETY (Q_3 = UNCONTROLLED/SELF-CONTROLLED)

4.1.1 Q3 Aspect of Anxiety (Q_3 = Uncontrolled / Self-controlled)

4.1.2 The Interactive Effect of Age and Treatment on Q_3

4.1.3 The Interactive Effect of Gender and Treatment on Q_3

4.1.4 The Interactive Effect of Marital status and Treatment on Q_3

4.2 C ASPECT OF ANXIETY (C = EMOTIONAL UNSTABLE / EMOTIONAL STABLE)

4.2.1 Effect of Treatment on C

4.2.2 The Interactive Effect of Age and Treatment on C

4.2.3 The Interactive Effect of Gender and Treatment on C

4.2.4 The Interactive Effect of Marital status and Treatment on C

4.3 L ASPECT OF ANXIETY (L = SUSPICIOUS/TRUSTING)

4.3.1 Effect of Treatment on L

4.3.2 The Interactive Effect of Age and Treatment on L

4.3.3 The Interactive Effect of Gender and Treatment on L

4.3.4 The Interactive Effect of Marital status and Treatment on L

4.4 O ASPECT OF ANXIETY (O = APPREHENSIVE/SELF-ASSURED)

4.4.1 Effect of Treatment on O

4.4.2 The Interactive Effect of Age and Treatment on O

4.4.3 The Interactive Effect of Gender and Treatment on O

4.4.4 The Interactive Effect of Marital status and Treatment on O

4.5 Q_4 ASPECT OF ANXIETY (Q_4 = TENSED/RELAXED)

4.5.1 Effect of Treatment on Q_4

4.5.2 The Interactive Effect of Age and Treatment on Q_4

4.5.3 The Interactive Effect of Gender and Treatment on Q_4

4.5.4 The Interactive Effect of Marital status and Treatment on Q_4

4.6 A SCORE ON ANXIETY SCALE (A = COVERT)

4.6.1 Effect of Treatment on A score

4.6.2 The Interactive Effect of Age and Treatment on A score

4.6.3 The Interactive Effect of Gender and Treatment on A score

4.6.4 The Interactive Effect of Marital status and Treatment on A score

4.7 B SCORE ON ANXIETY SCALE (B = OVERT)

4.7.1 Effect of Treatment on B score

4.7.2 The Interactive Effect of Age and Treatment on B score

4.7.3 The Interactive Effect of Gender and Treatment on B score

4.7.4 The Interactive Effect of Marital status and Treatment on B score

4.8 TOTAL SCORE OF ANXIETY

4.8.1 Effect of Treatment on total score

4.8.2 The Interactive Effect of Age and Treatment on total score

4.8.3 The Interactive Effect of Gender and Treatment on total score

4.8.4 The Interactive Effect of Marital status and Treatment on total score

INTRODUCTION

The present study has been undertaken mainly to study the impact of Brahmi and Hypnosis on anxiety. As stated in preceding chapter under the heads of experimental design and statistical analyze of data, treatment i.e. Brahmi and Hypnosis alongwith age, gender and marital status were taken as independent variables. Total scores on the scale and the seven sub scales of IPAT anxiety scale were considered as dependent variable.

These variables were arranged in pretest, posttest, and control group design. And in this experimental design the subjects voluntarily selected the type of treatment, so quasy experimental design was used.

Null hypotheses regarding to seven sub scales namely Q3, C, L, O, Q4, A and B alongwith total score of the ASQ were constructed in relation to age, gender and marital status.

Necessary descriptive and inferential statistics i.e. analysis of covariance (ANCOVA) was applied.

In this chapter results and discussion are presented.

Particularly the results of testing the null hypotheses presented in chapter III are described and discussed in this chapter. The remaining sections of this chapter are based on the different aspects of anxiety and anxiety as a whole.

All the statistical results have been summarized in adequate tables and also pictorially representative in graphs, placed at the proper place.

The between-subjects factors are presented in Table 4.0.

Table 4.0

Between-Subjects Factors

Factor	Level	Value Label	N
Age	.00	16-30	99
	1.00	31-45	60
	2.00	46-60	21
Gender	.00	Male	107
	1.00	Female	73
Marital Status	.00	Unmarried	66
	1.00	Married	114
Treatment	.00	No Treatment	60
	1.00	Brahmi	60
	2.00	Hypnosis	60

4.1 Q3 ASPECT OF ANXIETY (Q_3 = UNCONTROLLED/SELF-CONTROLLED)

There were four null hypotheses regarding the Q_3 aspect of anxiety. i.e. null hypotheses No 1 to 4.

For testing these null hypotheses the statistical technique of ANCOVA was employed instead of simple ANOVA following the recommendation of Borg & Gall (1983). In this ANCOVA the dependent variable was the scores on the post-test of Q_3 and main independent variables were treatment, age, gender and marital status. SPSS was used to analyze the data for ANCOVA. All the possible interactive effects were tested too. All the descriptive statistics are present in appendix no. C. The results of the ANCOVA for Q_3 aspect of anxiety is presented in table 4.1

Table: 4.1.a

Tests of Between-Subjects Effects

Dependent Variable: Score on the Posttest of Q3

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	564.873(a)	24	23.536	9.567	.000
Intercept	26.158	1	26.158	10.633	.001
Q3PRE	439.776	1	439.776	178.758	.000
AGE	11.253	2	5.627	2.287	.105
GENDER	.820	1	.820	.333	.565
MARITAL	4.713	1	4.713	1.916	.168
TREATMENT	15.210	2	7.605	3.091	.048
AGE * GENDER	1.221	2	.610	.248	.781
AGE * MARITAL	2.528	1	2.528	1.027	.312
GENDER * MARITAL	.103	1	.103	.042	.838
AGE * GENDER * MARITAL	.000	0	.	.	.
AGE * TREATMENT	9.298	4	2.325	.945	.440
GENDER * TREATMENT	1.103	2	.552	.224	.799
AGE * GENDER * TREATMENT	2.566	3	.855	.348	.791
MARITAL * TREATMENT	4.701	2	2.350	.955	.387
AGE * MARITAL * TREATMENT	.000	0	.	.	.
GENDER * MARITAL * TREATMENT	.401	2	.200	.081	.922
AGE * GENDER * MARITAL * TREATMENT	.000	0	.	.	.
Error	381.327	155	2.460		
Total	6524.000	180			
Corrected Total	946.200	179			

a R Squared = .597 (Adjusted R Squared = .535)

4.1.1 Effect of Treatment on Q_3

The hypothesis no.1 of the study was "There will be no significant differences among the posttest mean scores on Q_3 (Uncontrolled / Self-controlled) of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on Q_3 as a covariate."

The observation of table 4.1 shows that the F ratio for the treatment effect was 3.091 and it was significant at 0.05 levels. So the null hypothesis no.1 of the study was rejected and it was interpreted that treatment was effective for the Q_3 aspect of anxiety.

This means that administration of Brahmi and Hypnosis had significant effect on uncontrolled/self-controlled aspect of anxiety. It can be seen in table no. 4.1.b respectively.

Minimum mean scores 5.16 of hypnosis treated group suggest that hypnosis has affected positively in increasing self-control, and thereby reducing anxiety. Brahmi has also contributed and significantly in increasing self-control as compared to control group. However, the effect of hypnosis is higher than Brahmi.

The reason for high effect of hypnosis than Brahmi on self-control may lies in the fact that hypnosis is purely a psychological intervention while, Brahmi involves medicinal intervention involving much more physiological aspects.

Anxiety and self-control as its component constitutes psychological processes, as Freud said, anxiety underlies unconscious factors too. So, hypnosis dealing with the unconscious and the psychological processes might have produced most significant effect on anxiety and its component of self-control.

Table: 4.1.b

Treatment

Dependent Variable: Score on the Posttest of Q3

Estimated Marginal Means For Treatment

Mean		Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Control Group	5.943(a,b)	.237	5.475	6.410
Brahmi Group	5.409(a,b)	.310	4.796	6.022
Hypnosis Group	5.160(a,b)	.219	4.726	5.593
a Evaluated at covariates appeared in the model: Score on the Pretest of Q3 = 6.9500.				
b Based on modified population marginal mean.				

It can be seen from table 4.1.b that Hypnosis treatment was more effective than Brahmi treatment as the mean scores of Q_3 were 5.41 and 5.16 for Brahmi and Hypnosis respectively.

The control group was the most anxious group as far as the Q_3 is concerned.

4.1.2 The Interactive Effect of Age and Treatment on Q_3

The hypothesis no.2 of the study was “There will be no significant interactive effect of age and treatment on the posttest scores of Q_3 (Uncontrolled / Self-controlled) taking the pretest scores on Q_3 as a covariate.”

The F ratio for the interactive effect of age and treatment on Q_3 was 0.945 and it was not significant at 0.05 levels. Hence hypothesis no.2 was retained. It can be interpreted that there was no significant interactive effect of age and treatment on Q_3. i.e. self-control/uncontrolled aspect of anxiety means.

As the table shows treatment had independently produced significant effect on self-control/uncontrol aspect of anxiety-measurement but in interaction with age, it has no significant effect. This means that age, neither independently nor interactively has any specific effect on self-control/uncontrol aspect, and hence on anxiety too.

The reason might be that every age might have got its own self-control strategy to deal with anxiety and therefore age has not shown any significant effect in self-control component of anxiety measurement.

This further also suggests that both the treatments i.e. Hypnosis and Brahmi have their significant effects on Q_3 irrespective of any age group. These both treatments are almost equally effective for young, middle and older age groups.

4.1.3 The Interactive Effect of Gender and Treatment on Q_3

The hypothesis no.3 of the study was "There will be no significant interactive effect of gender and treatment on the posttest scores of Q_3 (Uncontrolled / Self-controlled) taking the pretest scores on Q_3 as a covariate."

The F ratio for the interactive effect of gender and treatment on Q_3 was 0.224 and it was not significant at 0.05 levels. Hence hypothesis no.3 was retained. It can be interpreted that there was no significant interactive effect of gender and treatment on Q_3.

4.1.4 The Interactive Effect of Marital status and Treatment on Q_3

The hypothesis no.4 of the study was "There will be no significant interactive effect of marital status and treatment on the posttest scores of Q_3 (Uncontrolled / Self-controlled) taking the pretest scores on Q_3 as a covariate."

The F ratio for the interactive effect of marital status and treatment on Q_3 was 0.955 and it was not significant at 0.05 levels. Hence hypothesis no.4 was retained. It can be interpreted that there was no significant interactive effect of marital status and treatment on Q_3.

Thus, it can bee seen by testing hypotheses no. 2, 3 and 4 age, gender and marital status have no significant effect on Q_3 aspect of anxiety means self control/uncontrol. So, irrespective of age, gender and marital status all treatments affect equally for Q_3 aspect.

4.2 C ASPECT OF ANXIETY
C = EMOTIONAL UNSTABLE / EMOTIONAL STABLE)

There were four null hypotheses regarding the C aspect of anxiety. i.e. null hypotheses No 5 to 8.

In this ANCOVA the dependent variable was the scores on the post-test of C and main independent variables were treatment, age, gender and marital status.

The results of the ANCOVA for C aspects of anxiety is presented in Table no.4.2.a

Table No.4.2.a

Tests of Between-Subjects Effects

Dependent Variable: Score on the Posttest of C

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	274.787(a)	24	11.449	5.709	.000
Intercept	58.194	1	58.194	29.015	.000
CPRE	206.954	1	206.954	103.186	.000
AGE	1.929	2	.964	.481	.619
GENDER	4.296	1	4.296	2.142	.145
MARITAL	.476	1	.476	.237	.627
TREATMEN	4.579	2	2.290	1.142	.322
AGE * GENDER	1.490	2	.745	.371	.690
AGE * MARITAL	.127	1	.127	.063	.802
GENDER * MARITAL	.164	1	.164	.082	.775
AGE * GENDER * MARITAL	.000	0	.	.	.
AGE * TREATMENT	3.936	4	.984	.491	.743
GENDER * TREATMENT	1.862	2	.931	.464	.630
AGE * GENDER * TREATMENT	.718	3	.239	.119	.949
MARITAL * TREATMENT	3.547	2	1.773	.884	.415
AGE * MARITAL * TREATMENT	.000	0	.	.	.
GENDER * MARITAL * TREATMENT	2.381E-02	2	1.190E-02	.006	.994
AGE * GENDER * MARITAL * TREATMENT	.000	0	.	.	.
Error	310.874	155	2.006		
Total	4685.000	180			
Corrected Total	585.661	179			
a R Squared = .469 (Adjusted R Squared = .387)					

4.2.1 Effect of Treatment on C

The hypothesis no.5 of the study was “There will be no significant differences among the posttest mean scores on C (emotional unstable / emotional stable) of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on C as a covariate.”

The observation of Table 4.2 shows that the F ratio for the treatment effect was 1.142 and it was not significant at 0.05 levels. So the null hypothesis no.5 of the study was retained and it was interpreted that treatment was not effective for the C aspect of anxiety.

4.2.2 The Interactive Effect of Age and Treatment on C

The hypothesis no.6 of the study was “There will be no significant interactive effect of age and treatment on the posttest scores of C (emotional unstable / emotional stable) taking the pretest scores on C as a covariate.

The F ratio for the interactive effect of age and treatment on C was 0.491 and it was not significant at 0.05 levels. Hence hypothesis no.6 was retained. It can be interpreted that there was no significant interactive effect of age and treatment on C.

4.2.3 The Interactive Effect of Gender and Treatment on C

The hypothesis no.7 of the study was “There will be no significant interactive effect of gender and treatment on the posttest scores of C (emotional unstable / emotional stable) taking the pretest scores on C as a covariate.”

The F ratio for the interactive effect of gender and treatment on C was 0.464 and it was not significant at 0.05 levels. Hence hypothesis no.7 was retained. It

can be interpreted that there was no significant interactive effect of gender and treatment on C.

4.2.4 The Interactive Effect of Marital status and Treatment on C

The hypothesis no.8 of the study was “There will be no significant interactive effect of marital status and treatment on the posttest scores of C (emotional unstable / emotional stable) taking the pretest scores on C as a covariate.”

The F ratio for the interactive effect of marital status and treatment on C was 0.884 and it was not significant at 0.05 levels. Hence hypothesis no.8 was retained. It can be interpreted that there was no significant interactive effect of marital status and treatment on C.

4.3 L ASPECT OF ANXIETY (L = SUSPICIOUS/TRUSTING)

There were four null hypotheses regarding the L aspect of anxiety. i.e. null hypotheses No 9 to 12.

In this ANCOVA the dependent variable was the scores on the post-test of L and main independent variables were treatment, age, gender and marital status.

The results of the ANCOVA for L aspects of anxiety is present in Table no.4.3.a

Table No.4.3.a
Tests of Between-Subjects Effects
Dependent Variable: Score on the Posttest of L

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	272.949(a)	24	11.373	5.970	.000
Intercept	22.836	1	22.836	11.986	.001
LPRE	224.246	1	224.246	117.706	.000
AGE	.914	2	.457	.240	.787
GENDER	.219	1	.219	.115	.735
MARITAL	1.093E-02	1	1.093E-02	.006	.940
TREATMENT	7.222	2	3.611	1.896	.154
AGE * GENDER	9.410	2	4.705	2.470	.088
AGE * MARITAL	.374	1	.374	.196	.658
GENDER * MARITAL	1.253	1	1.253	.657	.419
AGE * GENDER * MARITAL	.000	0	.	.	.
AGE * TREATMENT	5.229	4	1.307	.686	.603
GENDER * TREATMENT	.924	2	.462	.242	.785
AGE * GENDER * TREATMENT	1.156	3	.385	.202	.895
MARITAL * TREATMENT	.606	2	.303	.159	.853
AGE * MARITAL * TREATMENT	.000	0	.	.	.
GENDER * MARITAL * TREATMENT	.453	2	.227	.119	.888
AGE * GENDER * MARITAL * TREATMENT	.000	0	.	.	.
Error	295.295	155	1.905		
Total	3660.000	180			
Corrected Total	568.244	179			

a R Squared = .480 (Adjusted R Squared = .400)

4.3.1 Effect of Treatment on L

The hypothesis no.9 of the study was “There will be no significant differences among the posttest mean scores on L (suspicious / trusting) of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on L as a covariate.”

The observation of Table 4.3 shows that the F ratio for the treatment effect was 1.896 and it was not significant at 0.05 levels. So, the null hypothesis no.9 of the study was retained and it was interpreted that treatment was not effective for the L aspect of anxiety.

4.3.2 The Interactive Effect of Age and Treatment on L

The hypothesis no.10 of the study was “There will be no significant interactive effect of age and treatment on the posttest scores of L (suspicious / trusting) taking the pretest scores on L as a covariate.”

The F ratio for the interactive effect of age and treatment on L was 0.686 and it was not significant at 0.05 levels. Hence hypothesis no.10 was retained. It can be interpreted that there was no significant interactive effect of age and treatment on L.

4.3.3 The Interactive Effect of Gender and Treatment on L

The hypothesis no.11 of the study was “There will be no significant interactive effect of gender and treatment on the posttest scores of L (suspicious / trusting) taking the pretest scores on L as a covariate.”

The F ratio for the interactive effect of gender and treatment on L was 0.242 and it was not significant at 0.05 levels. Hence hypothesis no.11 was retained.

It can be interpreted that there was no significant interactive effect of gender and treatment on L.

4.3.4 The Interactive Effect of Marital status and Treatment on L

The hypothesis no.12 of the study was “There will be no significant interactive effect of marital status and treatment on the posttest scores of L (suspicious / trusting) taking the pretest scores on L as a covariate.”

The F ratio for the interactive effect of marital status and treatment on C was 0.159 and it was not significant at 0.05 levels. Hence hypothesis no.12 was retained. It can be interpreted that there was no significant interactive effect of marital status and treatment on L.

4.4 O ASPECT OF ANXIETY (O = APPREHENSIVE/SELF-ASSURED)

There were four null hypotheses regarding the O aspect of anxiety. i.e. null hypotheses No 13 to 16.

In this ANCOVA the dependent variable was the scores on the post-test of O and main independent variables were treatment, age, gender and marital status.

The results of the ANCOVA for O aspects of anxiety is present in Table no.4.4.a

Table No.4.4.a

Tests of Between-Subjects Effects

Dependent Variable: Score on the Posttest of O

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	475.344(a)	24	19.806	4.055	.000
Intercept	294.861	1	294.861	60.376	.000
OPRE	249.616	1	249.616	51.111	.000
AGE	8.792	2	4.396	.900	.409
GENDER	.622	1	.622	.127	.722
MARITAL	1.666	1	1.666	.341	.560
TREATMENT	51.545	2	25.773	5.277	.006
AGE * GENDER	45.270	2	22.635	4.635	.011
AGE * MARITAL	2.108E-03	1	2.108E-03	.000	.983
GENDER * MARITAL	6.863	1	6.863	1.405	.238
AGE * GENDER * MARITAL	.000	0	.	.	.
AGE * TREATMENT	14.414	4	3.603	.738	.568
GENDER * TREATMENT	45.814	2	22.907	4.690	.011
AGE * GENDER * TREATMENT	29.783	3	9.928	2.033	.112
MARITAL * TREATMENT	11.768	2	5.884	1.205	.303
AGE * MARITAL * TREATMENT	.000	0	.	.	.
GENDER * MARITAL * TREATMENT	7.968	2	3.984	.816	.444
AGE * GENDER * MARITAL * TREATMENT	.000	0	.	.	.
Error	756.983	155	4.884		
Total	12929.000	180			
Corrected Total	1232.328	179			

a R Squared = .386 (Adjusted R Squared = .291)

4.4.1 Effect of Treatment on O

The hypothesis no.13 of the study was “There will be no significant differences among the posttest mean scores on O (apprehensive / self-assured) of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on O as a covariate.”

The observation of Table 4.4 shows that the F ratio for the treatment effect was 5.277 and it was significant at 0.05 levels. So, the null hypothesis no.13 of the study was rejected and it was interpreted that treatment was effective for the O aspect of anxiety. The marginal means on the aspect O were 8.83, 7.29, and 7.66 for control, Brahmi, and Hypnosis groups. It means that the treatment of Brahmi was more effective than that of Hypnosis.

As the table show treatment had independently produced significant effect on O i.e. apprehensive or self-assured aspect of anxiety measurement.

The reason might be that hypnosis has affected to reduce apprehensiveness of the subject. The hypnotic suggestions created feeling of self-confidence and calmness, which ultimately leads to self-assurance. As self-assurance has been primarily considered a psychological manifestation, its management is also done through psychotherapeutic intervention. Here, Brahmi has not shown its impact on increasing self-assurance, may be due to physiological route of impact.

4.4.2 The Interactive Effect of Age and Treatment on O

The hypothesis no.14 of the study was “There will be no significant interactive effect of age and treatment on the posttest scores of O (apprehensive / self-assured) taking the pretest scores on O as a covariate.”

The F ratio for the interactive effect of age and treatment on O was 0.738 and it was not significant at 0.05 levels. Hence hypothesis no.14 was retained. It can be interpreted that there was no significant interactive effect of age and treatment on O.

4.4.3 The Interactive Effect of Gender and Treatment on O

The hypothesis no.15 of the study was "There will be no significant interactive effect of gender and treatment on the posttest scores of O (apprehensive / self-assured) taking the pretest scores on O as a covariate."

The F ratio for the interactive effect of gender and treatment on O was 4.690 and it was significant at 0.05 levels. So, the null hypothesis no.15 was rejected and it was interpreted that treatment was effective for the O aspect of anxiety. The marginal means for this interaction are presented in Table 4.4.b.

Table 4.4.b

Gender * Treatment

Dependent Variable: Score on the Posttest of O

		Mean	Std. Error	95% Confidence Interval	
Gender	**Treatment**			**Lower Bound**	**Upper Bound**
Male	**No Treatment**	8.847(a,b)	.432	7.994	9.700
	Brahmi	7.919(a,b)	.575	6.784	9.054
	Hypnosis	6.966(a,b)	.394	6.187	7.744
Female	**No Treatment**	8.811(a,b)	.510	7.804	9.818
	Brahmi	6.511(a,b)	.685	5.157	7.865
	Hypnosis	8.595(a,b)	.504	7.600	9.590
a Evaluated at covariates appeared in the model: Score on the Pretest of O = 10.7278.					
b Based on modified population marginal mean.					

Table 4.4.b shows that for male subjects, Hypnosis was more effective than Brahmi treatment; whereas in the case of female, Brahmi was more effective. This can be visualized from Figure 4.4.1

Here, according to the table mean score of hypnosis treated male is 6.966 and mean score of Brahmi treated male is 7.919 regarding O aspect of anxiety which means here hypnosis has been proved more effective treatment for males to reduce apprehensiveness.

This result is supported by a study done by Hurley (1980). The IPAT anxiety scale was used to measure anxiety level of 60 college going students and hypnotic treatment was an interventional method. Four experimental groups were administered different kinds of treatments (i.e. hypnosis, biofeedback, trophotropic and no treatment).

At the end of the 8-week period the scales were administered to all groups. ANCOVA suggested that hypnosis was a more effective technique for lowering anxiety levels when compared to biofeedback or trophotropic response procedures.

In present study also, hypnosis has proved more effective in reducing factor of apprehensiveness in anxiety compare to Brahmi, which supports the study done by Hurley (1980).

The nature and content of hypnotic suggestions might have affected for lowering future worries of patients. The hypnotic suggestions show its usefulness to increase self-assured behavior. The male subjects show responsiveness for apprehension, may be due to proneness of experiencing relaxation with this method. In males Brahmi shows less effectiveness compare to hypnosis treatment.

Whereas, in females, as per table no. 4.4.b Brahmi shows to be more effective compare to hypnosis for reduction of apprehensiveness. Here, in females

Brahmi seems effective to increase self-assurance. This may be due to individual gender's characteristics.

Brahmi's anti-anxiety property has proved its effectiveness. This is supported by an Australian double blind study done by Stough (2001). 46 subjects were given Brahmi for the period of 12 weeks. The findings show that after 12 weeks, the group that took Brahmi showed significantly reducing in anxiety.

Here, the duration of consuming Brahmi is same as in present research. The question remains about the gender discriminative effect of this ayurvedic treatment.

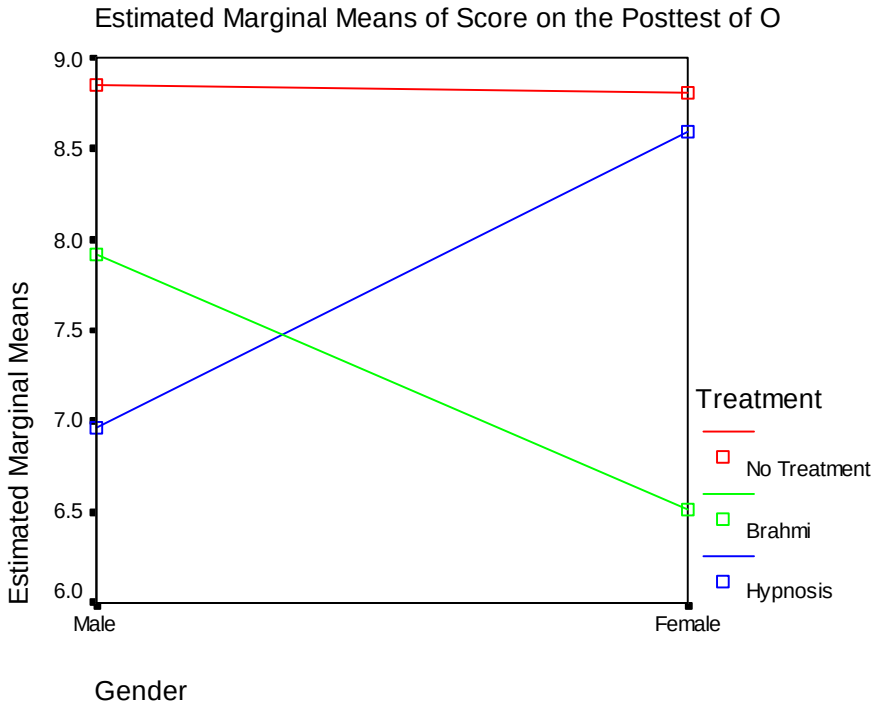

Figure: 4.4.1 Interaction of Gender and Treatment

4.4.4 The Interactive Effect of Marital status and Treatment on O

The hypothesis no.16 of the study was “There will be no significant interactive effect of marital status and treatment on the posttest scores of O (apprehensive / self-assured) taking the pretest scores on O as a covariate.”

The F ratio for the interactive effect of marital status and treatment on O was 1.205 and it was not significant at 0.05 levels. Hence hypothesis no.16 was retained. It can be interpreted that there was no significant interactive effect of marital status and treatment on O.

4.5 Q_4 ASPECT OF ANXIETY (Q_4 = TENSED/RELAXED)

There were four null hypotheses regarding the Q_4 aspect of anxiety. i.e. null hypotheses No 17 to 20.

In this ANCOVA the dependent variable was the scores on the post-test of Q_4 and main independent variables were treatment, age, gender and marital status.

The results of the ANCOVA for Q_4 aspects of anxiety is present in Table no.4.5.a

Table No.4.5.a

Tests of Between-Subjects Effects

Dependent Variable: Score on the Posttest of Q4

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	293.200(a)	24	12.217	1.561	.057
Intercept	280.985	1	280.985	35.909	.000
Q4PRE	99.979	1	99.979	12.777	.000
AGE	1.991	2	.995	.127	.881
GENDER	4.086	1	4.086	.522	.471
MARITAL	.135	1	.135	.017	.896
TREATMENT	40.652	2	20.326	2.598	.078
AGE * GENDER	18.744	2	9.372	1.198	.305
AGE * MARITAL	1.921	1	1.921	.245	.621
GENDER * MARITAL	2.468	1	2.468	.315	.575
AGE * GENDER * MARITAL	.000	0	.	.	.
AGE * TREATMENT	19.430	4	4.858	.621	.648
GENDER * TREATMENT	32.229	2	16.114	2.059	.131
AGE * GENDER * TREATMENT	29.022	3	9.674	1.236	.299
MARITAL * TREATMENT	6.911	2	3.456	.442	.644
AGE * MARITAL * TREATMENT	.000	0	.	.	.
GENDER * MARITAL * TREATMENT	34.633	2	17.317	2.213	.113
AGE * GENDER * MARITAL * TREATMENT	.000	0	.	.	.
Error	1212.861	155	7.825		
Total	10007.000	180			
Corrected Total	1506.061	179			
a R Squared = .195 (Adjusted R Squared = .070)					

4.5.1 Effect of Treatment on Q_4

The hypothesis no.17 of the study was “There will be no significant differences among the posttest mean scores on Q_4 (tense / relaxed) of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on Q_4 as a covariate.”

The observation of Table 4.5 shows that the F ratio for the treatment effect was 2.598 and it was not significant at 0.05 levels. So, the null hypothesis no.17 of the study was retained and it was interpreted that treatment was not effective for the Q_4 aspect of anxiety.

4.5.2 The Interactive Effect of Age and Treatment on Q_4

The hypothesis no.18 of the study was “There will be no significant interactive effect of age and treatment on the posttest scores of Q_4 (tense / relaxed) taking the pretest scores on Q_4 as a covariate.”

The F ratio for the interactive effect of age and treatment on Q_4 was 0.621 and it was not significant at 0.05 levels. Hence hypothesis no.18 was retained. It can be interpreted that there was no significant interactive effect of age and treatment on Q_4.

4.5.3 The Interactive Effect of Gender and Treatment on Q_4

The hypothesis no.19 of the study was “There will be no significant interactive effect of gender and treatment on the posttest scores of Q_4 (tense / relaxed) taking the pretest scores on Q_4 as a covariate.”

The F ratio for the interactive effect of gender and treatment on Q_4 was 2.059 and it was not significant at 0.05 levels. Hence hypothesis no.19 was retained.

It can be interpreted that there was no significant interactive effect of gender and treatment on Q_4.

4.5.4 The Interactive Effect of Marital status and Treatment on Q_4

The hypothesis no.20 of the study was “There will be no significant interactive effect of marital status and treatment on the posttest scores of Q_4 (tense / relaxed) taking the pretest scores on Q_4 as a covariate.”

The F ratio for the interactive effect of marital status and treatment on Q_4 was 0.442 and it was not significant at 0.05 levels. Hence hypothesis no.20 was retained. It can be interpreted that there was no significant interactive effect of marital status and treatment on Q_4.

4.6 A SCORE ON ANXIETY SCALE (A = COVERT)

There were four null hypotheses regarding the A score aspect of anxiety. i.e. null hypotheses No 21 to 24.

In this ANCOVA the dependent variable was the scores on the post-test of A score and main independent variables were treatment, age, gender and marital status.

The results of the ANCOVA for A score aspects of anxiety is present in following table.

Table 4.6.a
Tests of Between-Subjects Effects

Dependent Variable: Score on the Posttest of A

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	587.083(a)	24	24.462	1.543	.061
Intercept	1767.676	1	1767.676	111.527	.000
APRE	122.257	1	122.257	7.713	.006
AGE	10.096	2	5.048	.318	.728
GENDER	24.178	1	24.178	1.525	.219
MARITAL	10.061	1	10.061	.635	.427
TREATMENT	14.698	2	7.349	.464	.630
AGE * GENDER	9.334	2	4.667	.294	.745
AGE * MARITAL	6.704E-02	1	6.704E-02	.004	.948
GENDER * MARITAL	.307	1	.307	.019	.889
AGE * GENDER * MARITAL	.000	0	.	.	.
AGE * TREATMENT	38.878	4	9.719	.613	.654
GENDER * TREATMENT	115.928	2	57.964	3.657	.028
AGE * GENDER * TREATMENT	78.174	3	26.058	1.644	.181
MARITAL * TREATMENT	37.229	2	18.614	1.174	.312
AGE * MARITAL * TREATMENT	.000	0	.	.	.
GENDER * MARITAL * TREATMENT	53.284	2	26.642	1.681	.190
AGE * GENDER * MARITAL * TREATMENT	.000	0	.	.	.
Error	2456.717	155	15.850		
Total	45548.000	180			
Corrected Total	3043.800	179			

a R Squared = .193 (Adjusted R Squared = .068)

4.6.1 Effect of Treatment on A score

The hypothesis no.21 of the study was “There will be no significant differences among the posttest mean scores on A (covert) score of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on A score as a covariate.”

The observation of Table 4.6.a shows that the F ratio for the treatment effect was 0.464 and it was not significant at 0.05 levels. So, the null hypothesis no.21 of the study was retained and it was interpreted that treatment was not effective for the A score aspect of anxiety.

4.6.2 The Interactive Effect of Age and Treatment on A score

The hypothesis no.22 of the study was “There will be no significant interactive effect of age and treatment on the posttest scores of A (covert) score taking the pretest scores on A score as a covariate.”

The F ratio for the interactive effect of age and treatment on A score was 0.613 and it was not significant at 0.05 levels. Hence hypothesis no.22 was retained. It can be interpreted that there was no significant interactive effect of age and treatment on A score.

4.6.3 The Interactive Effect of Gender and Treatment on A score

The hypothesis no.23 of the study was “There will be no significant interactive effect of gender and treatment on the posttest scores of A (covert) score taking the pretest scores on A score as a covariate.”

The F ratio for the interactive effect of gender and treatment on A score was 3.657 and it was significant at 0.05 levels. So, the null hypothesis no.23 was

rejected and it was interpreted that the interactive effect of gender and treatment was effective for the A score aspect of anxiety. Table 4.5.b shows the marginal means for this interaction. Hypnosis and Brahmi was more effective for male and female, respectively on covert anxiety. (Please see figure 4.6.1.)

Table 4.6.b

Gender * Treatment

Dependent Variable: Score on the Posttest of A

		Mean	Std. Error	95% Confidence Interval	
Gender	**Treatment**			**Lower Bound**	**Upper Bound**
Male	**No Treatment**	16.527(a,b)	.773	15.001	18.053
	Brahmi	14.302(a,b)	1.028	12.273	16.332
	Hypnosis	14.130(a,b)	.706	12.735	15.525
Female	**No Treatment**	15.763(a,b)	.928	13.930	17.595
	Brahmi	15.549(a,b)	1.229	13.121	17.978
	Hypnosis	16.880(a,b)	.902	15.099	18.662
a Evaluated at covariates appeared in the model: Score on the Pretest of A = 18.2333.					
b Based on modified population marginal mean.					

As the table no. 4.6.b shows hypnosis is more effective than Brahmi as far as covert (cryptic) anxiety of males is concern. Hypnosis has shown its impact to reduce indirect anxiety. This may be because males more willingness compare to females towards hypnotic treatment, which supports Kaplan and Sadock's (1995) statement that hypnotic process requires active participation and willingness of the subject (patient) to experience hypnotic trance.

While Brahmi did not show similar or higher effect than hypnosis on indirect manifestation of anxiety symptoms. Here, hypnosis works at sub-conscious level to reduce cryptic anxiety by reducing unconscious conflicts. In control

group, as per expectation anxiety-reducing effect is not seen because of no administration of any treatment.

Whereas, Brahmi shows its effectiveness on indirect aspect of anxiety in females. That means Brahmi affects on biological causal aspects of anxiety due to its biological mode of action. The result supports Singh and Singh's (1980) study on 35 patients who were treated for anxiety neurosis for four weeks. The patients who took Brahmi had a 20% reduction in anxiety level.

But the question remains about effectiveness on males in present study. Moreover, in females Hypnosis seems less effective on cryptic anxiety compare to control group, which again indicates that indirect anxiety in females might have reduced by the course of time. May be the control group of females might have developed anxiety controlling behavior by themselves. This is observable from Figure 4.6.1

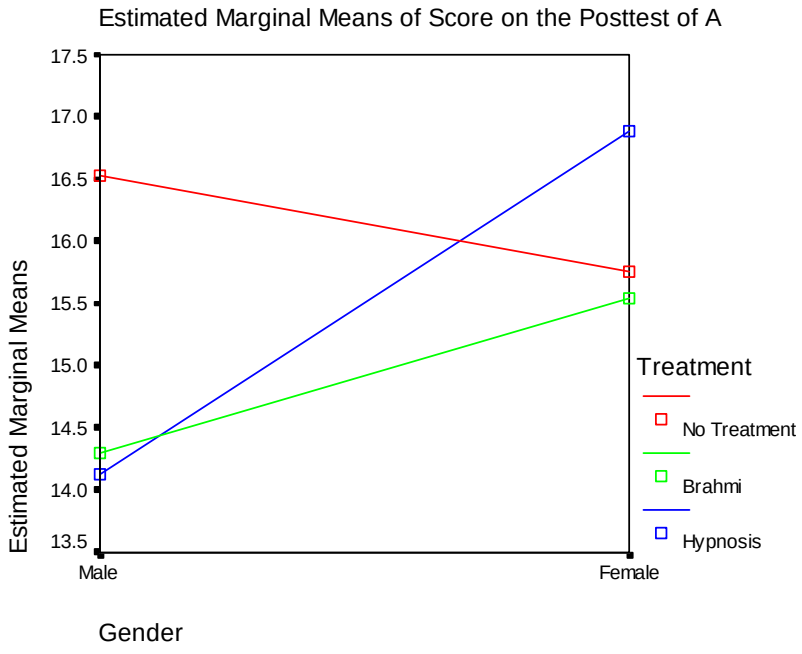

Figure: 4.6.1 Interaction Between Gender and Treatment

4.6.4 The Interactive Effect of Marital status and Treatment on A score

The hypothesis no.24 of the study was “There will be no significant interactive effect of marital status and treatment on the posttest scores of A (covert) score taking the pretest scores on A score as a covariate.”

The F ratio for the interactive effect of marital status and treatment on A score was 1.174 and it was not significant at 0.05 levels. Hence hypothesis no.24 was retained. It can be interpreted that there was no significant interactive effect of marital status and treatment on A score. Here, hypnosis seems to be more effective in males as far as covert or indirect anxiety.

As hypnosis works at subconscious level, it might have affected to reduce internal or indirect anxiety symptoms.
Here, Brahmi shows more effect on females to reduce indirect anxiety as it has shown on O aspect i.e. apprehensiveness or self-assured aspect of anxiety measurement.

4.7 B SCORE ON ANXIETY SCALE (B = OVERT)

There were four null hypotheses regarding the B score aspect of anxiety. i.e. null hypotheses No 25 to 28.

In this ANCOVA the dependent variable was the scores on the post-test of B score and main independent variables were treatment, age, gender and marital status.

The results of the ANCOVA for B score aspects of anxiety is present in Table no.4.7.a

Table No.4.7.a

Tests of Between-Subjects Effects

Dependent Variable: Score on the Posttest of B

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	428.678(a)	24	17.862	1.401	.115
Intercept	1409.743	1	1409.743	110.558	.000
BPRE	191.946	1	191.946	15.053	.000
AGE	32.270	2	16.135	1.265	.285
GENDER	35.109	1	35.109	2.753	.099
MARITAL	11.401	1	11.401	.894	.346
TREATMENT	59.051	2	29.525	2.316	.102
AGE * GENDER	16.008	2	8.004	.628	.535
AGE * MARITAL	4.029	1	4.029	.316	.575
GENDER * MARITAL	26.747	1	26.747	2.098	.150
AGE * GENDER * MARITAL	.000	0	.	.	.
AGE * TREATMENT	9.817	4	2.454	.192	.942
GENDER * TREATMENT	28.199	2	14.099	1.106	.334
AGE * GENDER * TREATMENT	45.845	3	15.282	1.198	.312
MARITAL * TREATMENT	5.950	2	2.975	.233	.792
AGE * MARITAL * TREATMENT	.000	0	.	.	.
GENDER * MARITAL * TREATMENT	58.567	2	29.283	2.297	.104
AGE * GENDER * MARITAL * TREATMENT	.000	0	.	.	.
Error	1976.433	155	12.751		
Total	38814.000	180			
Corrected Total	2405.111	179			

a R Squared = .178 (Adjusted R Squared = .051)

4.7.1 Effect of Treatment on B score

The hypothesis no.25 of the study was “There will be no significant differences among the posttest mean scores on B (overt) score of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on B score as a covariate.”

The observation of Table 4.7 shows that the F ratio for the treatment effect was 2.316 and it was not significant at 0.05 levels. So, the null hypothesis no.25 of the study was retained and it was interpreted that treatment was not effective for the B score aspect of anxiety.

4.7.2 The Interactive Effect of Age and Treatment on B score

The hypothesis no.26 of the study was “There will be no significant interactive effect of age and treatment on the posttest scores of B (overt) score taking the pretest scores on B score as a covariate.”

The F ratio for the interactive effect of age and treatment on B score was 0.192 and it was not significant at 0.05 levels. Hence hypothesis no.26 was retained. It can be interpreted that there was no significant interactive effect of age and treatment on B score.

4.7.3 The Interactive Effect of Gender and Treatment on B score

The hypothesis no.27 of the study was “There will be no significant interactive effect of gender and treatment on the posttest scores of B (overt) score taking the pretest scores on B score as a covariate.”

The F ratio for the interactive effect of gender and treatment on A score was 1.106 and it was not significant at 0.05 levels. Hence hypothesis no.27 was

retained. It can be interpreted that there was no significant interactive effect of gender and treatment on A score.

4.7.4 The Interactive Effect of Marital status and Treatment on B score

The hypothesis no.28 of the study was “There will be no significant interactive effect of marital status and treatment on the posttest scores of B (overt) score taking the pretest scores on B score as a covariate.”

The F ratio for the interactive effect of marital status and treatment on B score was 0.233 and it was not significant at 0.05 levels. Hence hypothesis no.28 was retained. It can be interpreted that there was no significant interactive effect of marital status and treatment on B score.

4.8 TOTAL SCORE OF ANXIETY

There were four null hypotheses regarding the B score aspect of anxiety. i.e. null hypotheses No 29 to 32.

In this ANCOVA the dependent variable was the scores on the post-test of Total score and main independent variables were treatment, age, gender and marital status.

The results of the ANCOVA for Total score aspects of anxiety is present in Table no.4.8.a

Table 4.8.a
Tests of Between-Subjects Effects
Dependent Variable: Total Score on the Posttest

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1275.938(a)	24	53.164	1.909	.010
Intercept	4613.747	1	4613.747	165.652	.000
TOTPRE	540.362	1	540.362	19.401	.000
AGE	78.794	2	39.397	1.415	.246
GENDER	1.482E-02	1	1.482E-02	.001	.982
MARITAL	39.706	1	39.706	1.426	.234
TREATMENT	92.520	2	46.260	1.661	.193
AGE * GENDER	51.617	2	25.808	.927	.398
AGE * MARITAL	3.541	1	3.541	.127	.722
GENDER * MARITAL	12.710	1	12.710	.456	.500
AGE * GENDER * MARITAL	.000	0	.	.	.
AGE * TREATMENT	54.458	4	13.614	.489	.744
GENDER * TREATMENT	110.163	2	55.081	1.978	.142
AGE * GENDER * TREATMENT	95.983	3	31.994	1.149	.331
MARITAL * TREATMENT	122.591	2	61.296	2.201	.114
AGE * MARITAL * TREATMENT	.000	0	.	.	.
GENDER * MARITAL * TREATMENT	37.043	2	18.521	.665	.516
AGE * GENDER * MARITAL * TREATMENT	.000	0	.	.	.
Error	4317.056	155	27.852		
Total	162297.000	180			
Corrected Total	5592.994	179			

a R Squared = .228 (Adjusted R Squared = .109)

4.8.1 Effect of Treatment on total score

The hypothesis no.29 of the study was “There will be no significant differences among the posttest mean scores on total score of the Brahmi-treated, Hypnosis-treated and the control groups taking the pretest scores on total score as a covariate.”

The observation of Table 4.8 shows that the F ratio for the treatment effect was 1.661 and it was not significant at 0.05 levels. So, the null hypothesis no.29 of the study was retained and it was interpreted that treatment was not effective for the total score aspect of anxiety.

4.8.2 The Interactive Effect of Age and Treatment on total Score

The hypothesis no.30 of the study was “There will be no significant interactive effect of age and treatment on the posttest scores of total score taking the pretest scores on total score as a covariate.”

The F ratio for the interactive effect of age and treatment on total score was 0.489 and it was not significant at 0.05 levels. Hence hypothesis no.30 was retained. It can be interpreted that there was no significant interactive effect of age and treatment on total score.

4.8.3 The Interactive Effect of Gender and Treatment on total score

The hypothesis no.31 of the study was “There will be no significant interactive effect of gender and treatment on the posttest scores of total score taking the pretest scores on total score as a covariate.”

The F ratio for the interactive effect of gender and treatment on total score was 1.978 and it was not significant at 0.05 levels. Hence hypothesis no.31 was

retained. It can be interpreted that there was no significant interactive effect of gender and treatment on total score.

4.8.4 The Interactive Effect of Marital status and Treatment on total score

The hypothesis no.32 of the study was “There will be no significant interactive effect of marital status and treatment on the posttest scores of total score taking the pretest scores on total score as a covariate.”

The F ratio for the interactive effect of marital status and treatment on total score was 2.201 and it was not significant at 0.05 levels. Hence hypothesis no.32 was retained. It can be interpreted that there was no significant interactive effect of marital status and treatment on total score.

Thus 32 null hypotheses were tested and results were discussed.

Brahmi and Hypnosis are found equally effective as per as this experimental study is concerned.

CHAPTER-V

SUMMARY, CONCLUSIONS, LIMITATIONS AND SUGGESTIONS

5.1 SUMMARY

5.2 CONCLUSIONS

5.3 LIMITATIONS AND SUGGESTIONS

5.4 APPLICATIONS

5.1 INTRODUCTION

Finding various effective methods of coping with anxiety and stress have been a prime need of recent times. Two different methods for reduction of anxiety were studied in the present investigation. Among all psychological disorders anxiety is taken as a core problems issue to be solved by two different interventional treatment methods, first is Brahmi- an ayurvedic medicines and second, Hypnosis- a psychotherapy. These both interventional methods are well known as 'side effect free treatments.' Today, people from all walks of life experience anxiety in great deal in one form or another. These two methods can be easily induced under expert's observations hence further promote self-help modalities.

A number of researchers, in the west as well as in the east have confirmed the efficacy of Brahmi and Hypnosis independently. Brahmi's efficacy has been proved for improving stress adaptation, reduction of anxiety and nervous tension, as an anti epileptic and as a nervine tonic, memory and cognitive improvements etc.

In present research, Brahmi has been utilized as an anxiolytic agent. Being an ayurvedic physician investigator attempted Brahmi treatment for this study.

Hypnosis is used because of its well known anti anxiety effect. Relaxation achieved through hypnosis reduces anxious state and stress too.

As the title reads, the main problem under study has been: 'A Study of Impact of Brahmi an Ayurvedic Medicine and Hypnosis on Anxiety.' In other words, the present study has been undertaken by the investigator mainly with primary aim to find out better effectiveness of alternative therapies i.e. Brahmi- as an ayurvedic medicine and Hypnosis- as a psychotherapy on anxiety management, along with the role of other demographic variables, such as Age

(16-30, 31-45, 46-60 years), Gender (Male, Female) and Marital Status (unmarried, married).

Thus, specific objectives of the present study have been

1) To study the impact of Brahmi on anxiety.
2) To study the impact of hypnosis on anxiety.
3) To compare the impact of both treatment methods.
4) To know weather age, gender and marital status play any role regard to different methods of treatment.

In order to examine scientifically and methodologically the above objectives, various hypotheses were formulated for statistical testing and verification of the role of significance of differences among the levels of variables.

In present research anxiety was dependent variable and Brahmi, hypnosis and demographic variables like- age, gender and marital status were independent variables. Anxiety as measured by ASQ (IPAT anxiety scale), yielded 5 sub scales majoring five factors anxiety, namely Q_3 (Self-controlled), C (emotional unstable / emotional stable), L (suspicious / trusting), O (apprehensive / self-assured) & Q_4 (tensed / relaxed). Covert anxiety (A score) and Overt anxiety (B score) were also yielded as dependent variables. Various hypotheses regarding the relationship between various independent variables and 5 factors of anxiety can be stated as under.

In present study, for scientific and methodological investigation of the role of above mention objectives 32 null hypotheses were tested as mentioned in chapter III.

As observed from the specific objectives, three types of variables (i.e. independent, dependent and control variables) have been taken into account.

In present study, independent variable means those variables, which were manipulated or varied at different levels in order to study their effects. Treatment, Age, Gender and Marital status were independent variables.

The total anxiety scores on the ASQ and the subscales were dependent variables. Seven aspects of anxiety namely Q_3 (Uncontrolled / Self-controlled), C (Emotional unstable / emotional stable), L (Suspicious / trusting), O (Apprehensive / self-assured), Q_4 (Tensed / relaxed), A score (Covert anxiety) and B score (Overt anxiety) were considered as dependent variables.

All the other independent variables (except above mentioned four major independent variables) that are likely to influence the dependent variables, viz., personality characteristics, intellectual traits, habits, attitudes, culture, religion, reason, community, caste and sub caste and so on, have been deemed to be controlled or constant variables.

Equal number of participants in each treatment group and equal time interval for all the three levels of treatment were other constant variables in this study.

In the present study, pre test, post test, control group design and in this experimental design the subjects voluntarily selected the type of treatment, so quasy experimental design was used.

In the present study total 180 subjects were selected. They were the patients who came at O.P.D. level with more or less complaints pertaining to anxiety symptoms.

This clinical study was done on three different groups. 30 males and 30 females were given Brahmi treatment for the duration of 3 months. Same way, 30 males and 30 females were given Hypnosis treatment for the same duration. For controlling 30 males and 30 females were selected to whom no treatment was given however they were with anxiety symptoms.

In the present study, two tools were used. Indian adaptation of IPAT anxiety scale (ASQ) by S. D. Kapoor and Personal Data Sheet (P.D.S.).

For the procedure sample subjects or patients were selected from clinical setups, private as well as civil hospital.

All 180 subjects under the study were administered PDS (Personal Data Sheet) and the ASQ individually and separately, to determine anxiety level. All subjects were administered anxiety scales before and after treatments. The duration was maintained same as 12 weeks for the administration of both the treatments.

All the patients were given a choice to select any of the treatments i.e. Brahmi or Hypnosis as per their convenience. Being an ayurvedic physician investigator clinically decided the doses and administration of Brahmi. This ayurvedic treatment was given twice a day for 12 weeks.

For administration of hypnosis, subjects were taken under the procedure separately.

The control group comprises of 60 subjects, 30 males and 30 females. It is reported and tested on anxiety scale before and after duration of 12 weeks, but not treated lot.

These 60 subjects comprising of both sexes equally have been considered for comparative study with effect of Brahmi and Hypnosis. Again same duration was maintained.

Necessary descriptive and inferential statistics were used to analyze the obtained data of 180 subjects. In the descriptive statistics, the means and standard deviation were calculated for the total score on the IPAT anxiety scale

and scores for the subscales of the tool. For testing the hypotheses of the present study, analysis of covariance (ANCOVA) was applied. In this application the calculation of F ratios for the main and interactive effects of the independent variable were carried out.

All the results obtained by application of different statistical tests of significance have been summarized, tabulated, illustrated in appropriate graphs where necessary, and discussed in detail, in the main body of the thesis.

5.2 CONCLUSIONS

After careful study and the analysis of the data as shown in the previous chapters, the investigator arrived at the following conclusions.

1. Compare to control group, both the clinical therapies have significant influence on uncontrolled aspect of anxiety, rejecting first null hypothesis. Hypnosis comparatively proved to be more effective than Brahmi to increase self-controlled in anxiety patients. The content and nature of hypnotic suggestions about increasing self-confidence work significantly.

2. Compare to control group, both the treatments are found interactively effective with gender in reducing apprehensiveness among anxiety patients, rejecting the 13^{th} null hypothesis. It was found that hypnosis proved to be more effective compare to Brahmi for reduction of apprehensiveness in males.

   Females, contrary to popular view were found less effective by hypnosis. Brahmi played effective role in reduction of apprehensiveness in females. Treatment in form of physical substance has played a better role to reduce future worries or anxiety in females.

3. Both the treatments are found interactively effective with gender in reducing the indirect aspect of anxiety, rejecting 23rd null hypothesis. Compare to Brahmi and control group, hypnotic therapy showed more efficacy in reduction of cryptic anxiety in males. Whereas in females, compare to hypnosis and control group, Brahmi proved its higher effectiveness. Here, control group also shows more reduction in covert anxiety compare to hypnosis-administered group.

However, these findings in main variables as such should be interpreted with care and caution, in view of some significant interaction of one or the other variables.

5.3 LIMITATIONS AND SUGGESTIONS

No doubt, all the care has been taken to use more adequate design and more refined statistical procedure in the present study in order to examine, the impact of Brahmi- an ayurvedic medicine and hypnosis on anxiety along with, the rule of other demographic variables such as age, gender and marital status, even though the study had its own limitations that would restrict the investigator to draw inferences and generalizations.

Such restrictions stem first from the nature and size of the sample. The sample size is too small for generalization. Moreover, the study was restricted to the urban patients mainly and few demographic variables have been taken in present study. In view of this, it is suggested that to widen the scope of applicability of this research, it should be carried out on a larger sample, with variety of representatives from divergent community groups. Equally important suggestion is that a comparative study of urban and rural patients can be done. Cross-cultural study about the present research title can be carried out.

Present researcher suggests that Brahmi can be compared to other allopathic anxiolytic viz. Benzodiazapines. Of course, a study has been carried out to compare Brahmi and Lorazepam- a Benzodiazapine on animals by Singh and Dhawan (1997) at CDRI. It is suggested that same can be done on humans also. The study can focus on comparison of two different medicinal methods of treatment i.e. ayurvedic and allopathic.

It is further suggested that hypnosis can be compared to allopathic anxiolytic medicine for the same regard. It can be an interesting comparison of psychotherapy and medicine.

Next, pretest posttest quasy design and more refined statistical procedures have been utilized with all care caution in the present study in order to exert more control over extraneous variance and minimize error variance and yet, it is likely that a few least expected discrepancies might have crept in, that might be responsible for some errors even in the present results.

In view of this, it is suggested that future researcher should continue their efforts to arrive at more refined designs and statistical procedures available to avoid the likely errors.

The investigator has not been very happy with the use of less efficient tools to measure anxiety and its factors. Perhaps, more efficient tools would have helped in arriving ate more useful inferences. Hence, equally important suggestion is that every future researcher in this area should take maximum care to use the most reliable and valid tools to measure anxiety and its factors. The deep study of such variable needs more sophisticated clinical instrument for better and firm conclusions.

It can be further suggested that both the treatments can be administered with the use of different tools or by adding more tools with ASQ. One can use

interview method rather than questionnaire for diagnosis or monitoring anxiety level.

One important suggestion arising from present study is that a further research attempt should be undertaken to investigate the impact of Brahmi and hypnosis on more factors of anxiety considering different definitions of it. In the present research, only five pre-determined factors of anxiety given in ASQ were inquired. Other aspects of anxiety can be studied with the use of aforesaid interventional methods.

The present study was undertaken only for 12 weeks. The treatment duration can be stretched more. The investigator suggests continuing this intervention for 6 months or more. The enhanced duration may show different results.

It can be also suggested that comparison of Brahmi and Hypnosis can be monitored on other neurotic disorders, considering the indications of these treatment methods.

No doubt, present study carries a number of limitations, it suggests ample possibilities in the clinical area.

5.4 APPLICATIONS

1. This study provides the choice of selection of treatment method for anxiety reduction.
2. It helps the clinicians to select better therapeutic method for anxiety.
3. Hypnosis can be administered as an adjuvant therapy along with other anxiolytic.
4. Hypnosis treatment can be advised to patients as a handy tool for self-relaxation.

5. There can be other multiple disorders on which Brahmi can be administered as per indications.
6. Other medhya rasayan (Brahmi like medicines) can be used for anxiety reduction.
7. Yoga can be combined with ayurvedic treatment like Brahmi and Hypnosis as well.
8. Present study provides a vision to combine other such multiple combinations to be used for psychological disorders.
9. Present study focus more light on “adverse side effect free methods” as alternative treatments.

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APPENDIXES

APPENDIX-C

Descriptive Statistics

Appendix C

The Descriptive Statistics

Table-1

Statistics

		Score on the Pretest of Q3	Score on the Posttest of Q3	Score on the Pretest of C	Score on the Posttest of C	Score on the Pretest of L	Score on the Posttest of L	Score on the Pretest of O	Score on the Posttest of O	Score on the Pretest of Q4	Score on the Posttest of Q4	Score on the Pretest of A	Score on the Posttest of A	Score on the Pretest of B	Score on the Posttest of B	Total Score on the Pretest	Total Score on the Posttest
N	Valid	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean		6.9500	5.5667	5.5833	4.7722	4.3722	4.1444	10.7278	8.0611	9.4667	6.8722	18.2333	15.3667	18.8944	14.2222	37.1167	29.5056
Std. Error of Mean		.2320	.1714	.1841	.1348	.1367	.1328	.3272	.1956	.2811	.2162	.4542	.3074	.5326	.2732	.8603	.4166
Median		7.0000	6.0000	6.0000	5.0000	4.0000	4.0000	10.0000	8.0000	9.0000	7.0000	18.0000	15.0000	19.0000	14.0000	37.0000	29.0000
Mode		8.00	6.00	6.00	4.00	4.00	3.00	10.00	8.00	9.00	6.00	17.00	16.00	22.00	12.00	32.00	28.00
Std. Deviation		3.1129	2.2991	2.4696	1.8088	1.8340	1.7817	4.3900	2.6238	3.7720	2.9006	6.0943	4.1236	7.1461	3.6656	11.5426	5.5898
Skewness		.352	-.077	.295	.299	-.085	.511	.290	.062	.110	.473	.246	.334	.155	.789	.242	.100
Std. Error of Skewness		.181	.181	.181	.181	.181	.181	.181	.181	.181	.181	.181	.181	.181	.181	.181	.181
Kurtosis		.105	1.118	-.152	.304	.361	1.579	-.365	.207	-.018	.328	-.110	1.282	-.653	.882	-.150	.208
Std. Error of Kurtosis		.360	.360	.360	.360	.360	.360	.360	.360	.360	.360	.360	.360	.360	.360	.360	.360
Range		16.00	16.00	12.00	10.00	10.00	12.00	20.00	15.00	20.00	17.00	31.00	28.00	33.00	22.00	63.00	32.00
Minimum		.00	-4.00	.00	.00	.00	.00	2.00	1.00	.00	.00	3.00	2.00	3.00	8.00	6.00	10.00
Maximum		16.00	12.00	12.00	10.00	10.00	12.00	22.00	16.00	20.00	17.00	34.00	30.00	36.00	30.00	69.00	42.00

APPENDIX-C

Descriptive Statistics

Frequency Table

Table-2

Score on the Pretest of Q3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	1.1	1.1	1.1
	1.00	2	1.1	1.1	2.2
	2.00	8	4.4	4.4	6.7
	3.00	12	6.7	6.7	13.3
	4.00	17	9.4	9.4	22.8
	5.00	20	11.1	11.1	33.9
	6.00	20	11.1	11.1	45.0
	7.00	22	12.2	12.2	57.2
	8.00	27	15.0	15.0	72.2
	9.00	16	8.9	8.9	81.1
	10.00	12	6.7	6.7	87.8
	11.00	7	3.9	3.9	91.7
	12.00	8	4.4	4.4	96.1
	13.00	1	.6	.6	96.7
	14.00	3	1.7	1.7	98.3
	15.00	1	.6	.6	98.9
	16.00	2	1.1	1.1	100.0
	Total	180	100.0	100.0	

Table-3

Score on the Posttest of Q3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**-4.00**	1	.6	.6	.6
	.00	1	.6	.6	1.1
	1.00	2	1.1	1.1	2.2
	2.00	5	2.8	2.8	5.0
	3.00	25	13.9	13.9	18.9
	4.00	27	15.0	15.0	33.9
	5.00	22	12.2	12.2	46.1
	6.00	47	26.1	26.1	72.2
	7.00	13	7.2	7.2	79.4
	8.00	20	11.1	11.1	90.6
	9.00	5	2.8	2.8	93.3
	10.00	10	5.6	5.6	98.9
	11.00	1	.6	.6	99.4
	12.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-4

Score on the Pretest of C

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	3	1.7	1.7	1.7
	1.00	2	1.1	1.1	2.8
	2.00	12	6.7	6.7	9.4
	3.00	18	10.0	10.0	19.4
	4.00	32	17.8	17.8	37.2
	5.00	22	12.2	12.2	49.4
	6.00	33	18.3	18.3	67.8
	7.00	19	10.6	10.6	78.3
	8.00	18	10.0	10.0	88.3
	9.00	5	2.8	2.8	91.1
	10.00	12	6.7	6.7	97.8
	11.00	1	.6	.6	98.3
	12.00	3	1.7	1.7	100.0
	Total	180	100.0	100.0	

Table-5

Score on the Posttest of C

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	1.1	1.1	1.1
	1.00	3	1.7	1.7	2.8
	2.00	6	3.3	3.3	6.1
	3.00	34	18.9	18.9	25.0
	4.00	42	23.3	23.3	48.3
	5.00	31	17.2	17.2	65.6
	6.00	37	20.6	20.6	86.1
	7.00	10	5.6	5.6	91.7
	8.00	10	5.6	5.6	97.2
	9.00	3	1.7	1.7	98.9
	10.00	2	1.1	1.1	100.0
	Total	180	100.0	100.0	

Table-6

Score on the Pretest of L

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**.00**	6	3.3	3.3	3.3
	1.00	3	1.7	1.7	5.0
	2.00	24	13.3	13.3	18.3
	3.00	12	6.7	6.7	25.0
	4.00	51	28.3	28.3	53.3
	5.00	33	18.3	18.3	71.7
	6.00	38	21.1	21.1	92.8
	7.00	5	2.8	2.8	95.6
	8.00	5	2.8	2.8	98.3
	9.00	2	1.1	1.1	99.4
	10.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-7

Score on the Posttest of L

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	1.1	1.1	1.1
	1.00	11	6.1	6.1	7.2
	2.00	11	6.1	6.1	13.3
	3.00	47	26.1	26.1	39.4
	4.00	34	18.9	18.9	58.3
	5.00	38	21.1	21.1	79.4
	6.00	23	12.8	12.8	92.2
	7.00	10	5.6	5.6	97.8
	8.00	1	.6	.6	98.3
	9.00	2	1.1	1.1	99.4
	12.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-8

Score on the Pretest of O

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**2.00**	3	1.7	1.7	1.7
	3.00	3	1.7	1.7	3.3
	4.00	8	4.4	4.4	7.8
	5.00	11	6.1	6.1	13.9
	6.00	5	2.8	2.8	16.7
	7.00	10	5.6	5.6	22.2
	8.00	19	10.6	10.6	32.8
	9.00	11	6.1	6.1	38.9
	10.00	22	12.2	12.2	51.1
	11.00	16	8.9	8.9	60.0
	12.00	19	10.6	10.6	70.6
	13.00	8	4.4	4.4	75.0
	14.00	11	6.1	6.1	81.1
	15.00	6	3.3	3.3	84.4
	16.00	5	2.8	2.8	87.2
	17.00	6	3.3	3.3	90.6
	18.00	9	5.0	5.0	95.6
	19.00	1	.6	.6	96.1
	20.00	5	2.8	2.8	98.9
	21.00	1	.6	.6	99.4
	22.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-9

Score on the Posttest of O

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1.00**	1	.6	.6	.6
	2.00	1	.6	.6	1.1
	3.00	6	3.3	3.3	4.4
	4.00	10	5.6	5.6	10.0
	5.00	11	6.1	6.1	16.1
	6.00	21	11.7	11.7	27.8
	7.00	18	10.0	10.0	37.8
	8.00	36	20.0	20.0	57.8
	9.00	20	11.1	11.1	68.9
	10.00	32	17.8	17.8	86.7
	11.00	8	4.4	4.4	91.1
	12.00	9	5.0	5.0	96.1
	13.00	3	1.7	1.7	97.8
	14.00	1	.6	.6	98.3
	15.00	2	1.1	1.1	99.4
	16.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-10

Score on the Pretest of Q4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	1.1	1.1	1.1
	2.00	4	2.2	2.2	3.3
	3.00	4	2.2	2.2	5.6
	4.00	5	2.8	2.8	8.3
	5.00	13	7.2	7.2	15.6
	6.00	12	6.7	6.7	22.2
	7.00	13	7.2	7.2	29.4
	8.00	14	7.8	7.8	37.2
	9.00	26	14.4	14.4	51.7
	10.00	18	10.0	10.0	61.7
	11.00	22	12.2	12.2	73.9
	12.00	11	6.1	6.1	80.0
	13.00	10	5.6	5.6	85.6
	14.00	11	6.1	6.1	91.7
	15.00	2	1.1	1.1	92.8
	16.00	5	2.8	2.8	95.6
	17.00	4	2.2	2.2	97.8
	18.00	3	1.7	1.7	99.4
	20.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-11

Score on the Posttest of Q4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	.6	.6	.6
	1.00	1	.6	.6	1.1
	2.00	6	3.3	3.3	4.4
	3.00	11	6.1	6.1	10.6
	4.00	21	11.7	11.7	22.2
	5.00	23	12.8	12.8	35.0
	6.00	24	13.3	13.3	48.3
	7.00	22	12.2	12.2	60.6
	8.00	21	11.7	11.7	72.2
	9.00	18	10.0	10.0	82.2
	10.00	12	6.7	6.7	88.9
	11.00	8	4.4	4.4	93.3
	12.00	7	3.9	3.9	97.2
	13.00	3	1.7	1.7	98.9
	16.00	1	.6	.6	99.4
	17.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-12

Score on the Pretest of A

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**3.00**	1	.6	.6	.6
	5.00	2	1.1	1.1	1.7
	6.00	1	.6	.6	2.2
	7.00	1	.6	.6	2.8
	8.00	4	2.2	2.2	5.0
	9.00	3	1.7	1.7	6.7
	10.00	4	2.2	2.2	8.9
	11.00	9	5.0	5.0	13.9
	12.00	4	2.2	2.2	16.1
	13.00	7	3.9	3.9	20.0
	14.00	12	6.7	6.7	26.7
	15.00	9	5.0	5.0	31.7
	16.00	15	8.3	8.3	40.0
	17.00	17	9.4	9.4	49.4
	18.00	14	7.8	7.8	57.2
	19.00	10	5.6	5.6	62.8
	20.00	12	6.7	6.7	69.4
	21.00	4	2.2	2.2	71.7
	22.00	7	3.9	3.9	75.6
	23.00	8	4.4	4.4	80.0
	24.00	8	4.4	4.4	84.4
	25.00	4	2.2	2.2	86.7
	26.00	5	2.8	2.8	89.4
	27.00	3	1.7	1.7	91.1
	28.00	5	2.8	2.8	93.9
	29.00	4	2.2	2.2	96.1
	30.00	1	.6	.6	96.7
	31.00	2	1.1	1.1	97.8

	32.00	1	.6	.6	98.3
	33.00	2	1.1	1.1	99.4
	34.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-13

Score on the Posttest of A

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**2.00**	1	.6	.6	.6
	7.00	2	1.1	1.1	1.7
	8.00	4	2.2	2.2	3.9
	9.00	6	3.3	3.3	7.2
	10.00	9	5.0	5.0	12.2
	11.00	9	5.0	5.0	17.2
	12.00	11	6.1	6.1	23.3
	13.00	6	3.3	3.3	26.7
	14.00	28	15.6	15.6	42.2
	15.00	15	8.3	8.3	50.6
	16.00	29	16.1	16.1	66.7
	17.00	7	3.9	3.9	70.6
	18.00	19	10.6	10.6	81.1
	19.00	8	4.4	4.4	85.6
	20.00	13	7.2	7.2	92.8
	21.00	5	2.8	2.8	95.6
	22.00	2	1.1	1.1	96.7
	25.00	1	.6	.6	97.2
	26.00	2	1.1	1.1	98.3
	27.00	1	.6	.6	98.9
	28.00	1	.6	.6	99.4
	30.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-14

Score on the Pretest of B

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**3.00**	1	.6	.6	.6
	6.00	4	2.2	2.2	2.8
	7.00	2	1.1	1.1	3.9
	8.00	5	2.8	2.8	6.7
	9.00	6	3.3	3.3	10.0
	10.00	7	3.9	3.9	13.9
	11.00	9	5.0	5.0	18.9
	12.00	6	3.3	3.3	22.2
	13.00	4	2.2	2.2	24.4
	14.00	9	5.0	5.0	29.4
	15.00	8	4.4	4.4	33.9
	16.00	9	5.0	5.0	38.9
	17.00	10	5.6	5.6	44.4
	18.00	6	3.3	3.3	47.8
	19.00	9	5.0	5.0	52.8
	20.00	9	5.0	5.0	57.8
	21.00	11	6.1	6.1	63.9
	22.00	13	7.2	7.2	71.1
	23.00	5	2.8	2.8	73.9
	24.00	8	4.4	4.4	78.3
	25.00	4	2.2	2.2	80.6
	26.00	4	2.2	2.2	82.8
	27.00	9	5.0	5.0	87.8
	28.00	3	1.7	1.7	89.4
	29.00	3	1.7	1.7	91.1
	30.00	4	2.2	2.2	93.3

	31.00	2	1.1	1.1	94.4
	32.00	5	2.8	2.8	97.2
	33.00	2	1.1	1.1	98.3
	34.00	2	1.1	1.1	99.4
	36.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-15

Score on the Posttest of B

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	**8.00**	6	3.3	3.3	3.3
	9.00	2	1.1	1.1	4.4
	10.00	19	10.6	10.6	15.0
	11.00	11	6.1	6.1	21.1
	12.00	37	20.6	20.6	41.7
	13.00	13	7.2	7.2	48.9
	14.00	17	9.4	9.4	58.3
	15.00	17	9.4	9.4	67.8
	16.00	17	9.4	9.4	77.2
	17.00	6	3.3	3.3	80.6
	18.00	7	3.9	3.9	84.4
	19.00	4	2.2	2.2	86.7
	20.00	15	8.3	8.3	95.0
	21.00	5	2.8	2.8	97.8
	22.00	3	1.7	1.7	99.4
	30.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-16

Total Score on the Pretest

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**6.00**	1	.6	.6	.6
	11.00	1	.6	.6	1.1
	13.00	1	.6	.6	1.7
	17.00	1	.6	.6	2.2
	19.00	2	1.1	1.1	3.3
	20.00	5	2.8	2.8	6.1
	21.00	2	1.1	1.1	7.2
	22.00	5	2.8	2.8	10.0
	23.00	4	2.2	2.2	12.2
	24.00	6	3.3	3.3	15.6
	25.00	3	1.7	1.7	17.2
	26.00	2	1.1	1.1	18.3
	27.00	5	2.8	2.8	21.1
	28.00	4	2.2	2.2	23.3
	29.00	3	1.7	1.7	25.0
	30.00	8	4.4	4.4	29.4
	31.00	7	3.9	3.9	33.3
	32.00	10	5.6	5.6	38.9
	33.00	5	2.8	2.8	41.7
	34.00	2	1.1	1.1	42.8
	35.00	2	1.1	1.1	43.9
	36.00	8	4.4	4.4	48.3
	37.00	9	5.0	5.0	53.3
	38.00	8	4.4	4.4	57.8
	39.00	6	3.3	3.3	61.1
	40.00	3	1.7	1.7	62.8

	41.00	5	2.8	2.8	65.6
	42.00	4	2.2	2.2	67.8
	43.00	8	4.4	4.4	72.2
	44.00	6	3.3	3.3	75.6
	45.00	4	2.2	2.2	77.8
	46.00	6	3.3	3.3	81.1
	47.00	5	2.8	2.8	83.9
	48.00	3	1.7	1.7	85.6
	49.00	1	.6	.6	86.1
	50.00	3	1.7	1.7	87.8
	52.00	1	.6	.6	88.3
	53.00	1	.6	.6	88.9
	54.00	5	2.8	2.8	91.7
	56.00	1	.6	.6	92.2
	57.00	2	1.1	1.1	93.3
	58.00	4	2.2	2.2	95.6
	59.00	1	.6	.6	96.1
	60.00	4	2.2	2.2	98.3
	63.00	1	.6	.6	98.9
	65.00	1	.6	.6	99.4
	69.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

Table-17

Total Score on the Posttest

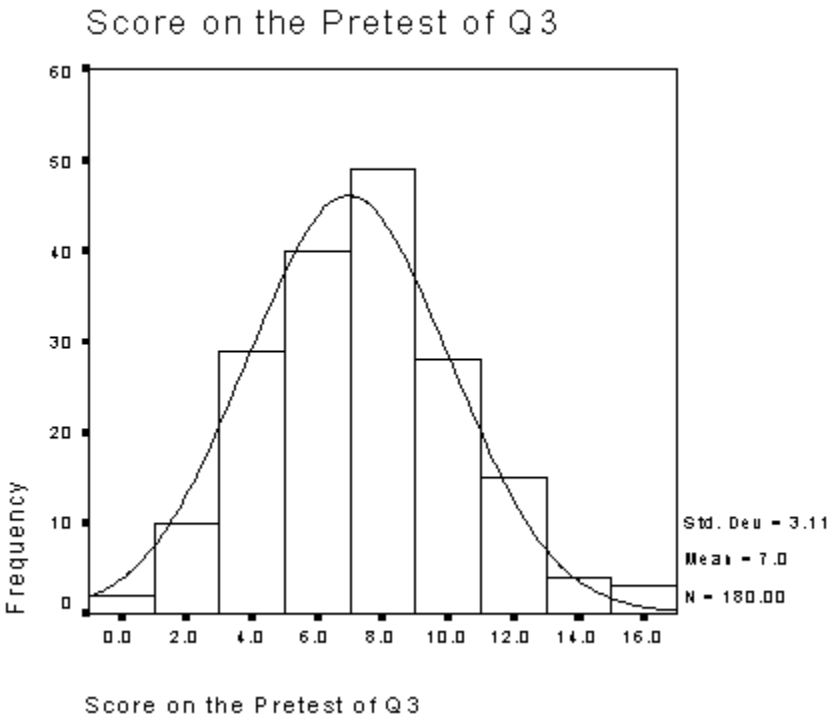
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**10.00**	1	.6	.6	.6
	16.00	1	.6	.6	1.1
	18.00	1	.6	.6	1.7
	19.00	2	1.1	1.1	2.8
	20.00	2	1.1	1.1	3.9
	21.00	4	2.2	2.2	6.1
	22.00	2	1.1	1.1	7.2
	23.00	4	2.2	2.2	9.4
	24.00	15	8.3	8.3	17.8
	25.00	8	4.4	4.4	22.2
	26.00	15	8.3	8.3	30.6
	27.00	9	5.0	5.0	35.6
	28.00	20	11.1	11.1	46.7
	29.00	16	8.9	8.9	55.6
	30.00	16	8.9	8.9	64.4
	31.00	10	5.6	5.6	70.0
	32.00	8	4.4	4.4	74.4
	33.00	4	2.2	2.2	76.7
	34.00	5	2.8	2.8	79.4
	35.00	5	2.8	2.8	82.2
	36.00	7	3.9	3.9	86.1
	37.00	5	2.8	2.8	88.9
	38.00	4	2.2	2.2	91.1
	39.00	6	3.3	3.3	94.4
	40.00	5	2.8	2.8	97.2
	41.00	4	2.2	2.2	99.4
	42.00	1	.6	.6	100.0
	Total	180	100.0	100.0	

APPENDIX-D

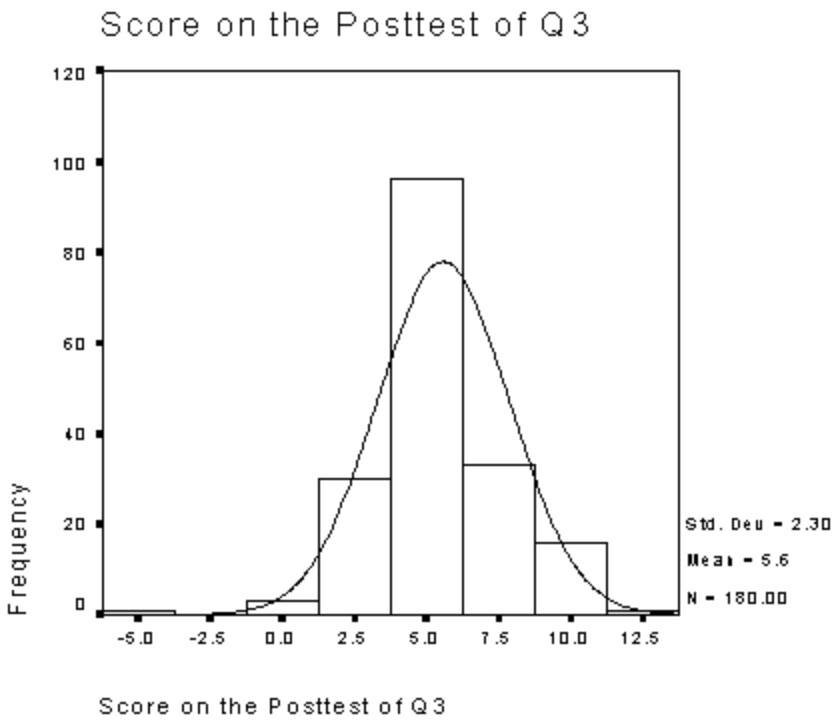
Graphs

Appendix D: Graphs

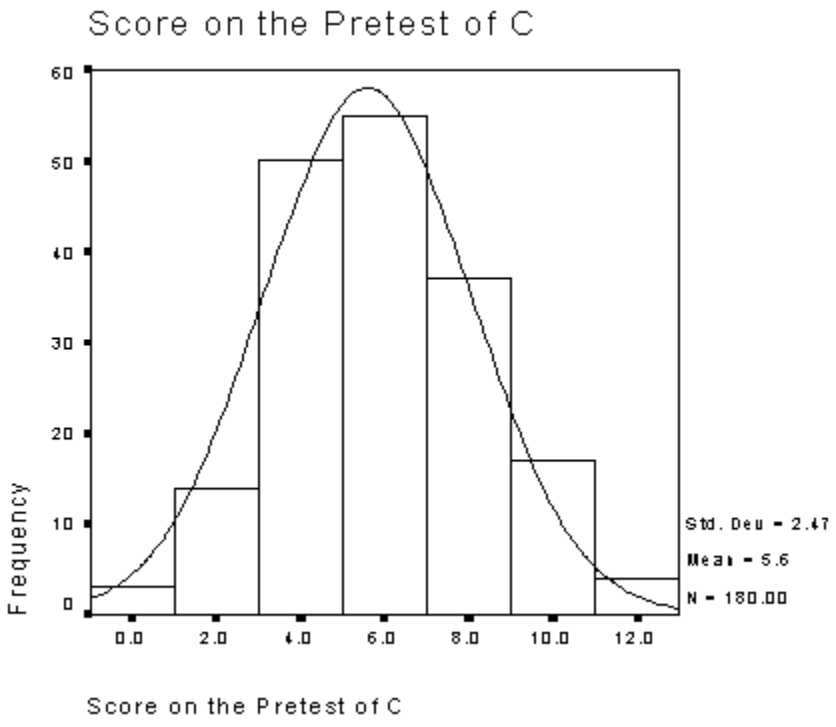
Histogram: 1



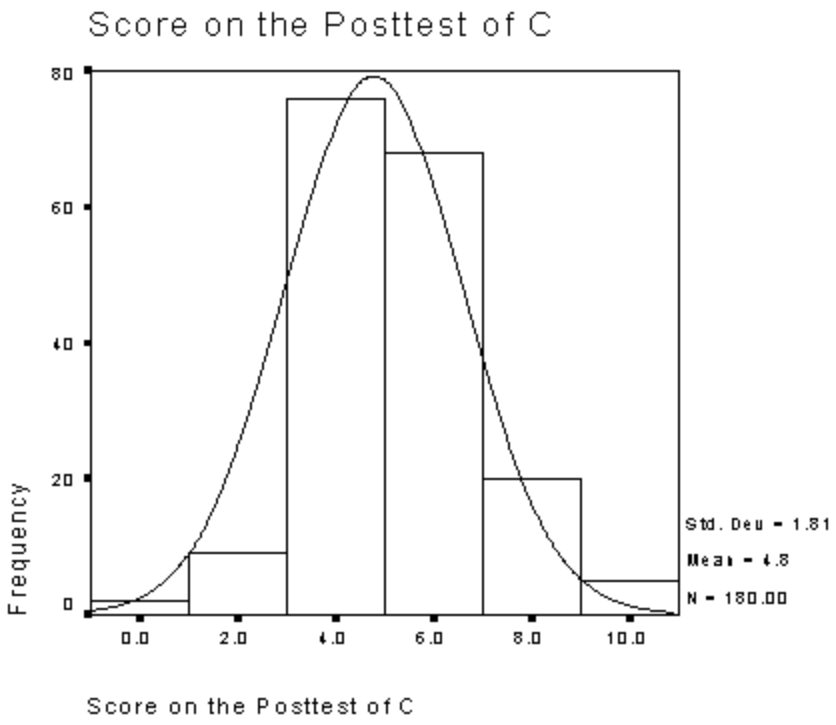
Histogram: 2



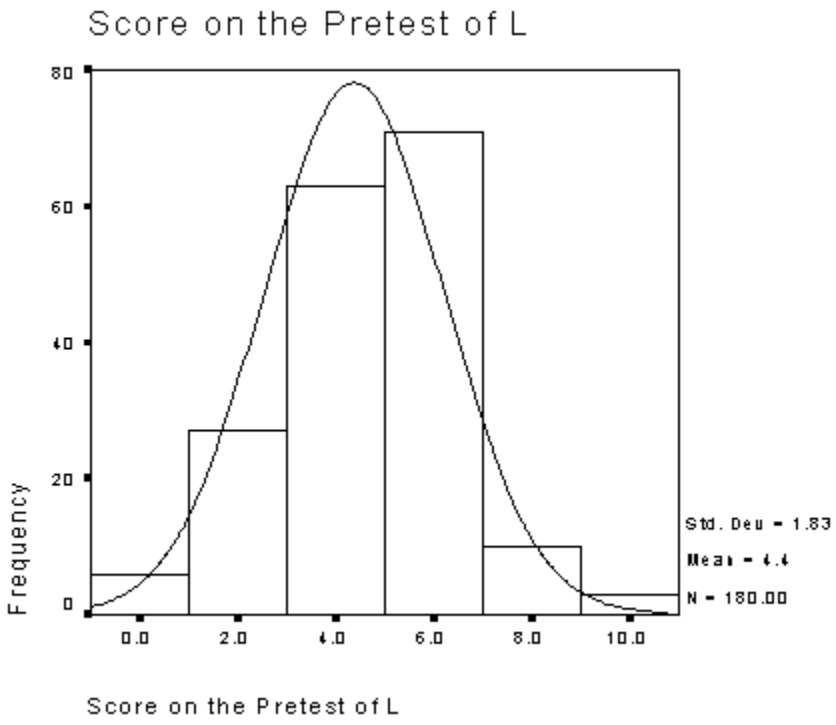
Histogram: 3



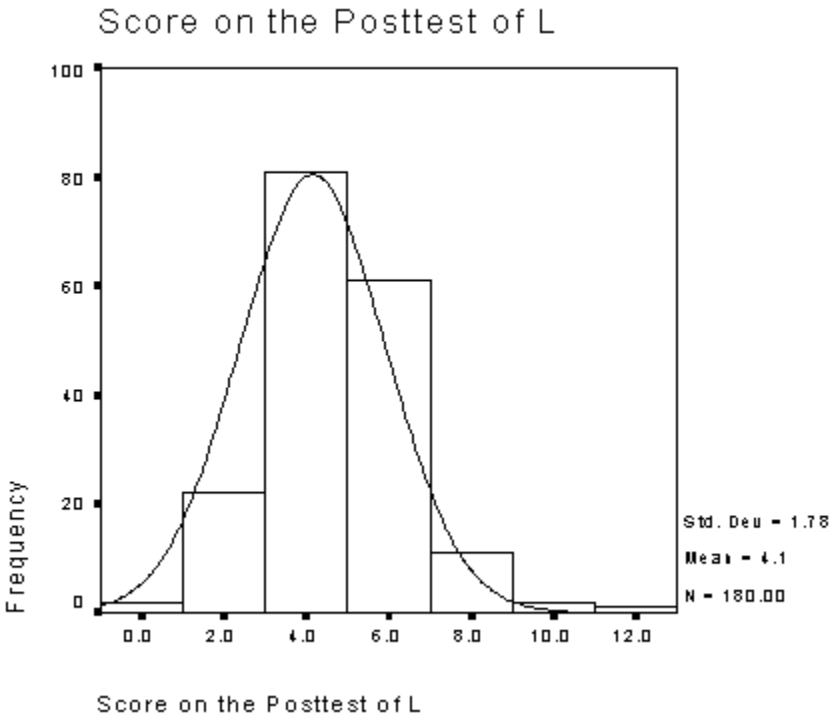
Histogram: 4


Score on the Posttest of C
Frequency
80
60
40
20
0
0.0
2.0
4.0
6.0
8.0
10.0
Std. Dev = 1.81
Mean = 4.8
N = 180.00
Score on the Posttest of C

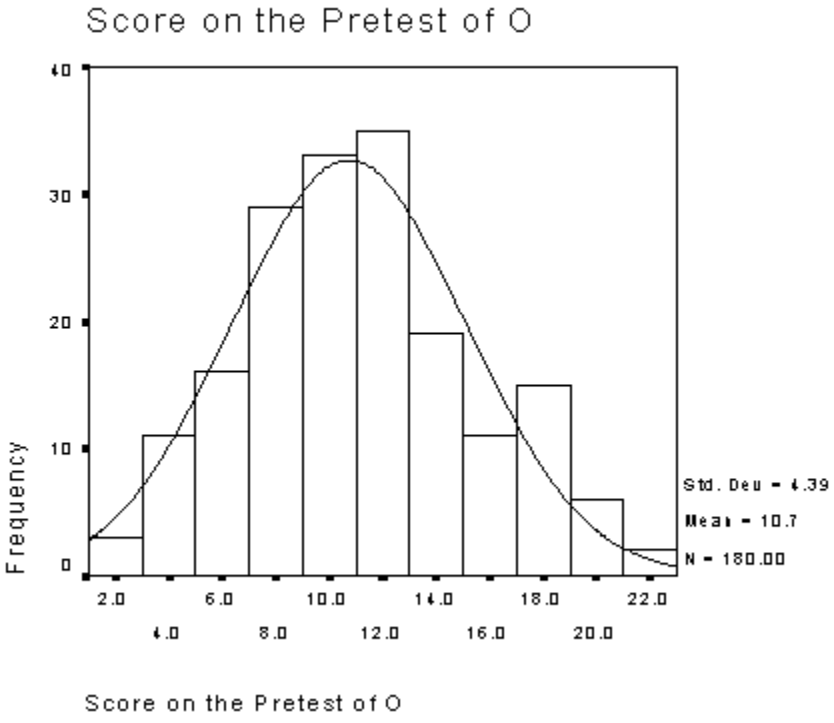
Histogram: 5


Score on the Pretest of L
Frequency
80
60
40
20
0
0.0
2.0
4.0
6.0
8.0
10.0
Std. Dev = 1.83
Mean = 4.4
N = 180.00
Score on the Pretest of L

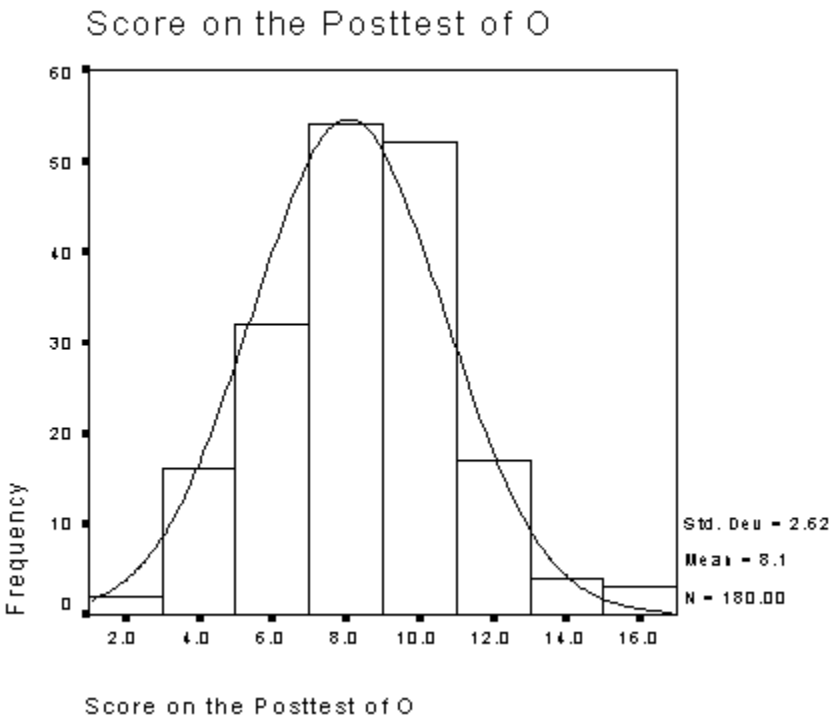
Histogram: 6



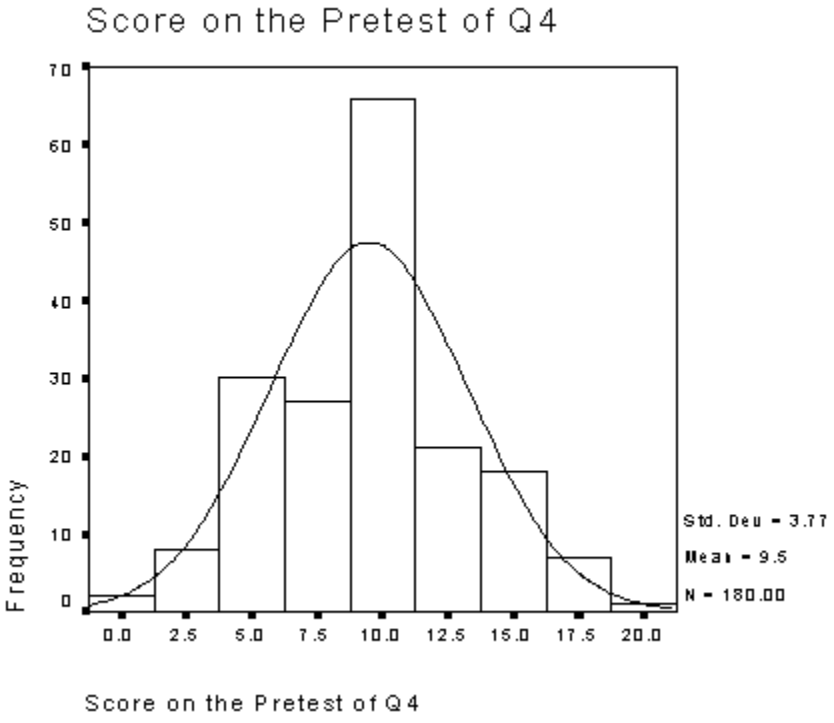
Histogram: 7



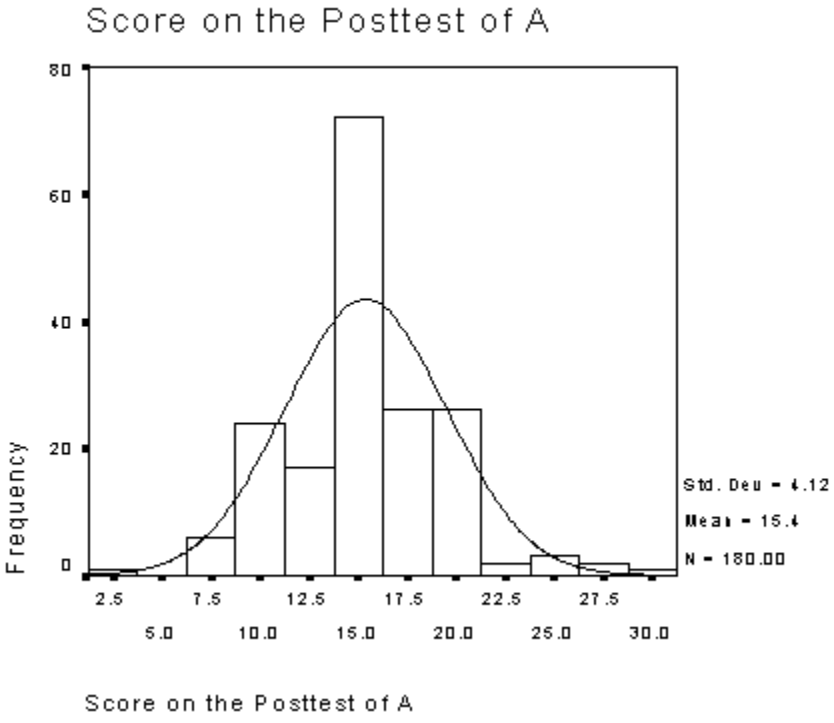
Histogram: 8



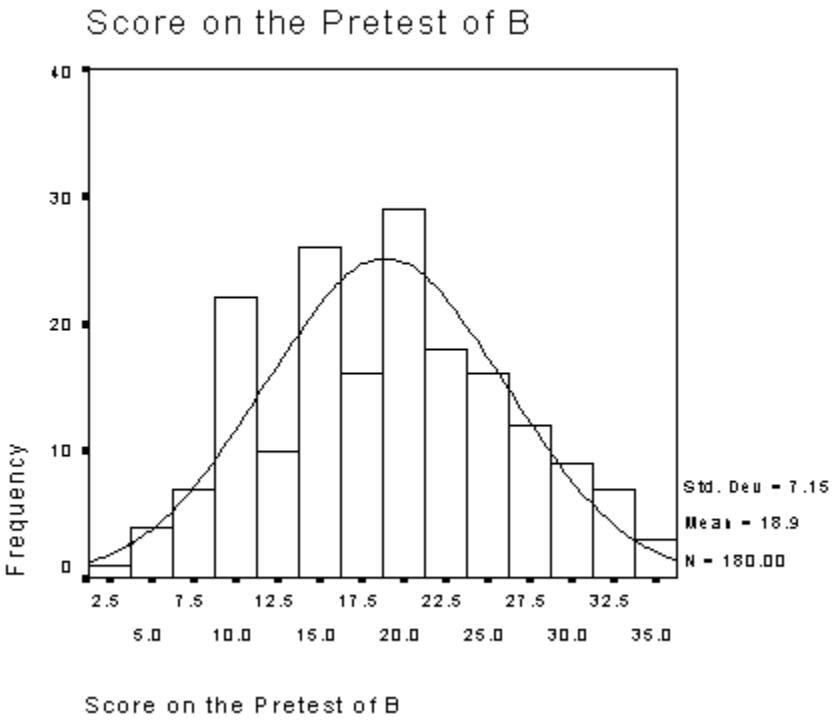
Histogram: 9



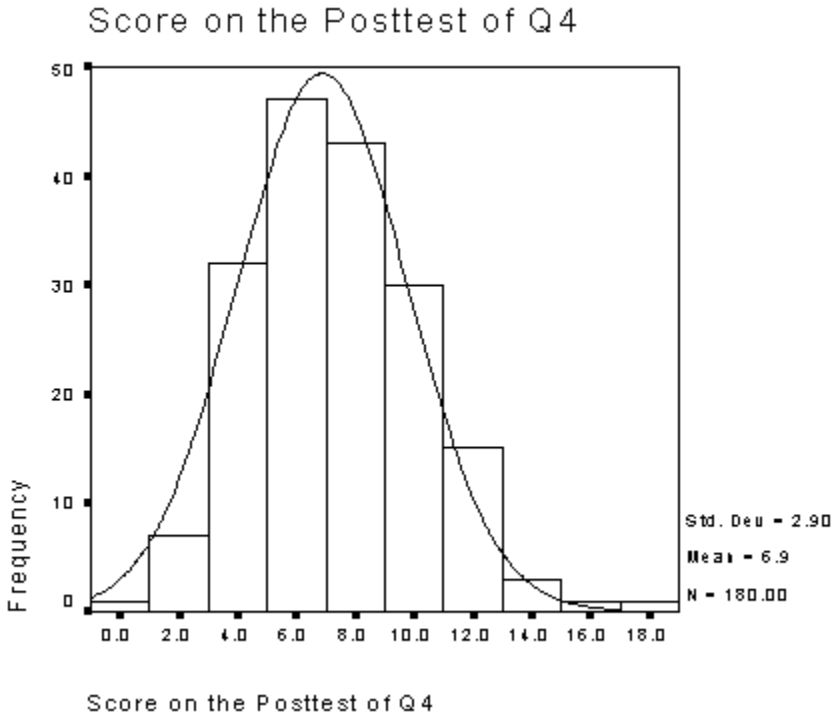
Histogram: 12



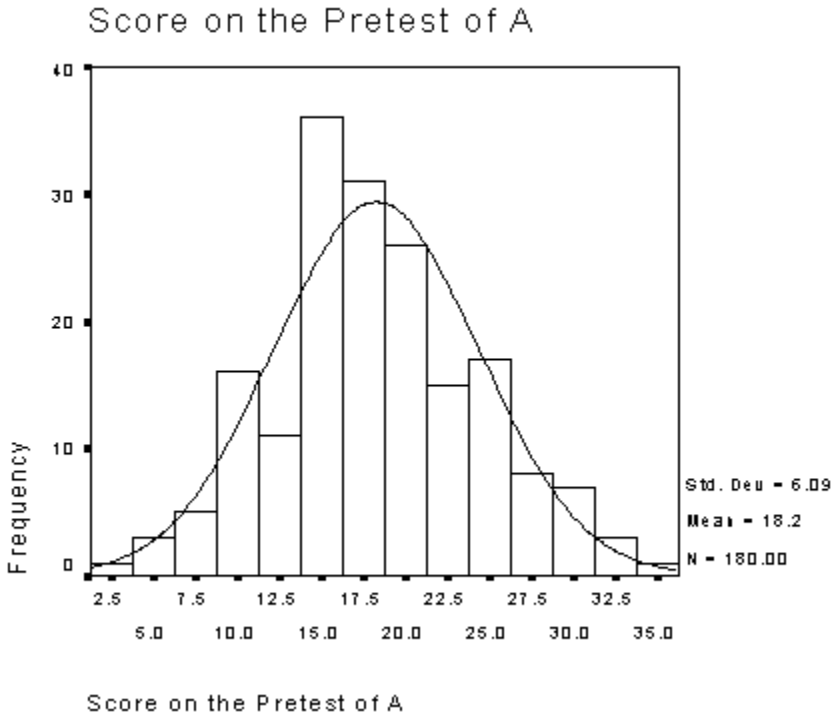
Histogram: 13



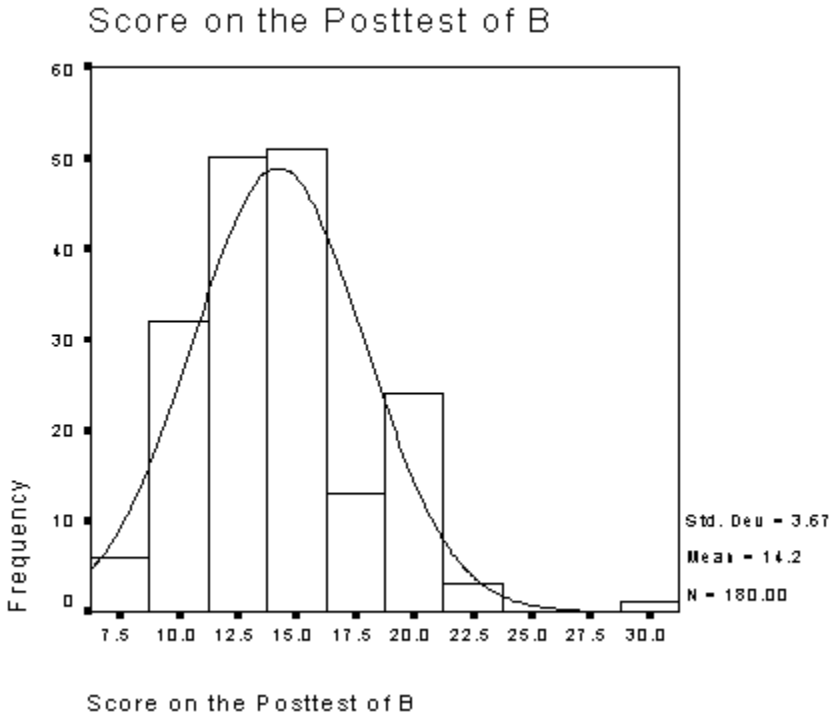
Histogram: 10



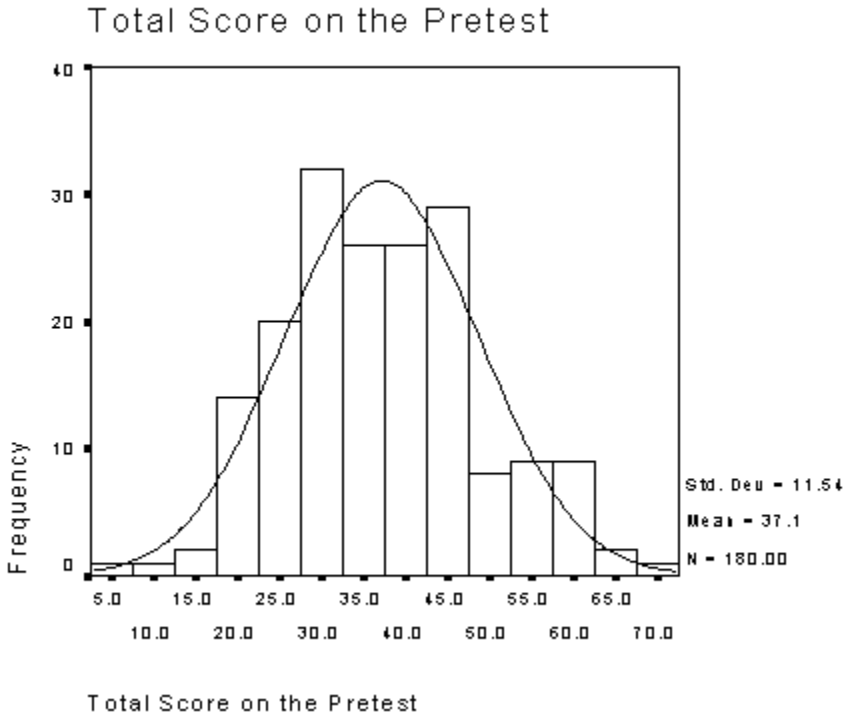
Histogram: 11



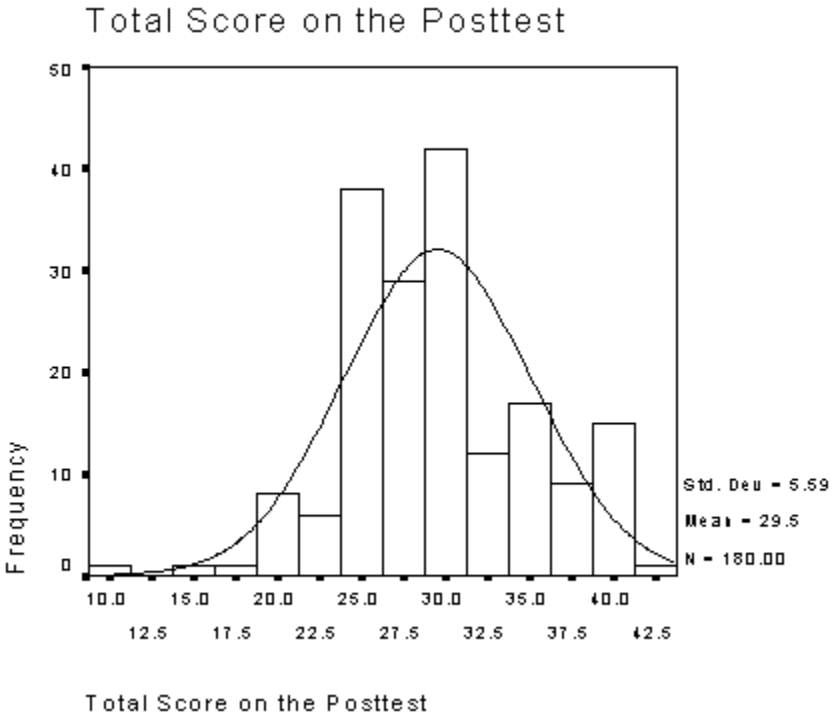
Histogram: 14



Histogram: 15



Histogram: 16



Appendix:E

LIST OF SLOKAS

(1) शरीरेन्द्रियसत्त्वात्मसंयोगो_धारि_जीवितम।_
नित्यगश्चानुबन्धश्च_पर्यायैरायुरुच्यते।।
(Ca. S ū . 1/42)

(2) हिताहितं_सुखं_दुःखमायुस्तस्य_हिताहितम्_।_
मानं_च_तच्च_यत्रोक्तमायुर्वेदः_स_उच्चत्ते_।।
(Ca. S ū . 1/41)

(3) समदोषः_समाग्निश्च_समधातुमलिक्रयः।_
प्रसन्नात्मेन्द्रियमनाः_स्वस्थ_इत्यभिधीयते।।__
(Su. S ū . 15/48)

(4) मन_एव_मनुष्याणां_कारणं_बन्धमोक्षयोः।_
बन्धाय_विषयासक्त_मुक्त्यै_निर्विषयं_स्मृतम्।।_
(**Brahmabind ū pani ṣ ad 2)**

(5) मन्यते_ज्ञायते_अनेन_इति_मनः।_
(S'abdakalpadruma)

(6) सति_ह्यात्मेन्द्रियार्थानां_सन्निकर्षे_न_वर्तते।_
वैवृत्त्यान्मनसो_ज्ञानं_सान्निध्यातच्य_वर्तते।।
(Ca. S ā . 1/18-19)

(7) अणुत्वमथ_चैकत्वं_द्वौ_गुणौ_मनसः_स्मृतौ।
(Ca. S ā . 1/19)

(8) अचेतनं_क्रियावच्च_मनः_चेतयिता_परः_।
युक्तस्य_मनसा_तस्य_निर्दिश्यन्ते_विभोः_क्रिया_।।_
चेतनावान्_यतश्चात्मा_ततः_कर्ता_निरुच्यते_।_
अचेतनत्वाच्च_मनः_क्रियावदपि_नोच्यते_।।_
(Ca. S ā . 1/75-76)

(9) इन्द्रियाभिग्रहः कर्म मनसः स्वस्य निग्रहः।
ऊहो विचारश्च, ततः परं बुद्धिः प्रवर्तते।।
(ibid 1/21)

(10) चिन्त्यं विचार्यमूह्यं च ध्येयं सङ्कल्प्यमेव च।
यत्किञ्चिन्मनसो ज्ञेयं तत्सर्व ह्यर्थसंज्ञकम्।।
(ibid 1/20)

(11) आत्मेन्द्रियमनोर्थानां सन्निकर्षात् प्रवर्तते।
सुखदुःखमनारम्भादात्मस्थे मनसि स्थिरे।।
(Ca. S ā . 1/138)

(12) दृष्टश्रुतानुभूतानां स्मरणात् स्मृतिरुच्यते।।
(Ca. S ā . 1/149)

(13) यदा तु मनसि क्लान्ते कर्मात्मानः क्लमान्विताः।
विषयेभ्यो निवर्तन्ते तदा स्वपिति मानवः।।
(Ca. S ū . 21/35)

(14) यद्यपि मनोऽपि सुखादिज्ञानं प्रति कारणत्वेनेन्द्रियम्।
(Cakrapani, Ca.S ū . 8/4)

(15) धीधृतिस्मृतिविभ्रमः कर्म यत्कुरुतेऽशुभम्।
प्रज्ञापराधं तं विद्यात् सर्वदोष प्रकोपणम्।।
(Ca. S ā . 1/102)

(16) दीर्घमायुः स्मृति मेधामारोग्यं तरुणं वयः।
प्रभावर्णस्वरोदार्यं देहेन्द्रियबलं परम्।।
वाक्सिद्धिं प्रणतिं कान्ति लभते ना रसायनात्।
लाभोपायो हि शस्तानां रसादीनां रसायनम्।
(Ca. Ci. 1/7-8)

(17) धी धैर्यात्मादिविज्ञानं मनोदोषौषं परम्।
(As. Hr. S ū . 1/26)

(18) मानसो ज्ञानविज्ञानधैर्यस्मृति समादिभिः।
(Ca. S ū . 1/58)

(19) युक्तिव्यपाश्रयं- संशोधनोपशमने चेष्टाश्च दृष्टफलाः।
एतंच्चैव भेषजमशभेदादपि द्विविधं - द्रव्यभूतम्, अद्रव्यभूतं च।।

(Ca. Vi. 1/58)

(20) तत्र बुद्धिमता मानसव्याधि परीतेनापि सता बुद्धया
हिताहितमवेक्ष्यावेक्ष्य धर्मार्थकामानामहितानामुपसेवने हितानां
चोपसेवने प्रयतितव्यं, न हयन्तरेण लोके
त्रयमितन्मानसं किंग्निन्निष्पद्यते सुखं वा दुःखं वा;
तस्मादेतच्चानुष्ठेयं - तद्विधानां चोपसेवने प्रयतितव्यम्
आत्मदेशकुलकाल बल शक्तिज्ञो यथावच्चेति
(Ca. S ū . 11/46)

(21) ब्राह्मी हिमा सरा तिक्ता लघुः मेध्या च शीतला।
कषाया मधुरा स्वादुपाकायुष्या रसायनी।।
(Bhavaprakasa.)

APPENDIX-F

Photographs

Hypnosis Treatment

Brahmi Plant

Dried Brahmi Leaves